North Station Area Mobility Action Plan

Final Report | September 1, 2017

Boston Transportation Department

bpda

CITY OF BOSTON • MASSACHUSETTS

OFFICE OF THE MAYOR
MARTIN J. WALSH

Dear Friends,

I am proud to present the North Station Area Mobility Action Plan, a set of transportation improvements and initiatives for the North Station Area that includes parts of the West End, North End, and Bulfinch Triangle neighborhoods. Working in concert with Boston's Citywide Plan *Imagine Boston* 2030 and Transportation Plan *Go Boston* 2030, these efforts were guided by the community's shared goals: improving safety, making the neighborhood more understandable, creating more mobility choices, and decreasing congestion. They have the potential to transform how people will relate to, enjoy and get around the area.

Neighborhood and community members have worked on this Action Plan for over a year, sharing their vision, concerns, and prioritized solutions through community meetings, at pop up sessions around the area, and online.

The North Station Area is a nexus of multi-modal transportation infrastructure that needs to benefit those who live, work and play in the area while connecting the city and region.

To that end, this Action Plan commits the City to implementing fifteen transformative projects in the next five years that encompass all modes: pedestrian, bicycle, transit and vehicular.

Major early actions are *Charles Circle Pedestrian Improvements*, *Bullfinch Triangle Access Improvements*, and *Pedestrian Priority on Canal Street*. Building momentum for the latter, the City hosted *Open Canal Street* in July, where the community and concert-goers came out to enjoy a car-free street.

Now we will start implementing these transformative improvements. We will continue to work together to determine the specifics to get these projects to completion, making the North Station Area a better place to walk, bike, take transit and drive.

Sincerely,

Martin J. Walsh
Mayor of Boston

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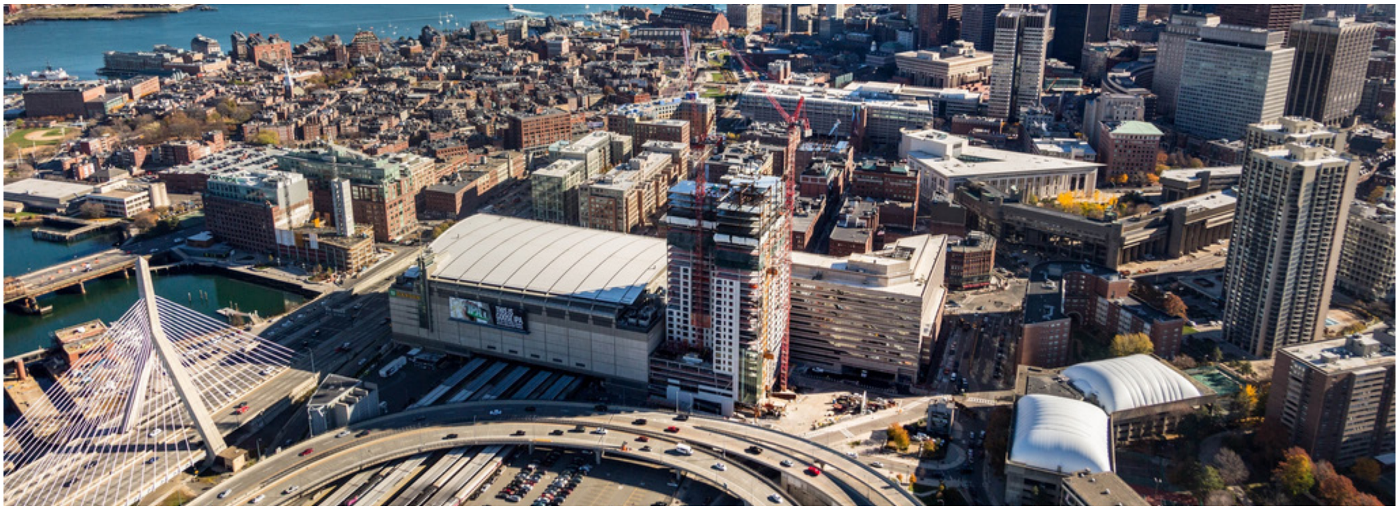
1. Introduction



The North Station Area as it was in the Spring of 2016 when the public process for this Action Plan began. Source: Landslides Aerial Photography; BPDA.

The North Station Area Mobility Action Plan (NSAMAP) is the product of an interdepartmental collaborative planning process involving hundreds of community comments, several outdoor "pop-up" events, and two design charrettes. The plan was born out of community concerns related to the increase in development projects in the area and the construction strains of the Connect Historic Boston project, including new lane and turn configurations along Causeway Street. As an Action Plan, NSAMAP was designed to sift through these comments and suggestions, as well as all of the infrastructure and development projects already underway, in order to determine a list of additional actions that will help improve transportation in the neighborhood for all users: pedestrians, cyclists, transit users, drivers, and others. The Action Plan will be used by City and Commonwealth agencies to focus efforts on resolving some of the problems that face local residents, businesses, and commuters.

Like several other neighborhoods in Boston, the North Station Area is experiencing a significant influx of new development—including hundreds of thousands of square feet of new residential, hotel, office, and retail space. As a major transportation hub, a premier events venue, and home to the region's largest hospital—the North Station Area will always be a flurry of activity. North Station itself brings in tens of thousands of transit riders daily, who then disperse into the city by foot, bikeshare, ride share, transit, or private shuttles and vehicles. Commuters' and event patrons' needs should be better balanced with those of local residents, who are growing in number every year. New residential buildings are already built or arriving soon in the Bulfinch Triangle and the neighborhood centered around Thoreau Path in the West End. Thoreau Path itself portrays the extent of the neighborhood's contrasts: a quiet, green escape from the bustling Bulfinch Triangle and the wide, heavily trafficked surrounding streets. The neighborhood as a whole is becoming more residential and is evolving into a destination within the City—for travel and events, but also for shopping, nightlife, and lunch during the workweek.

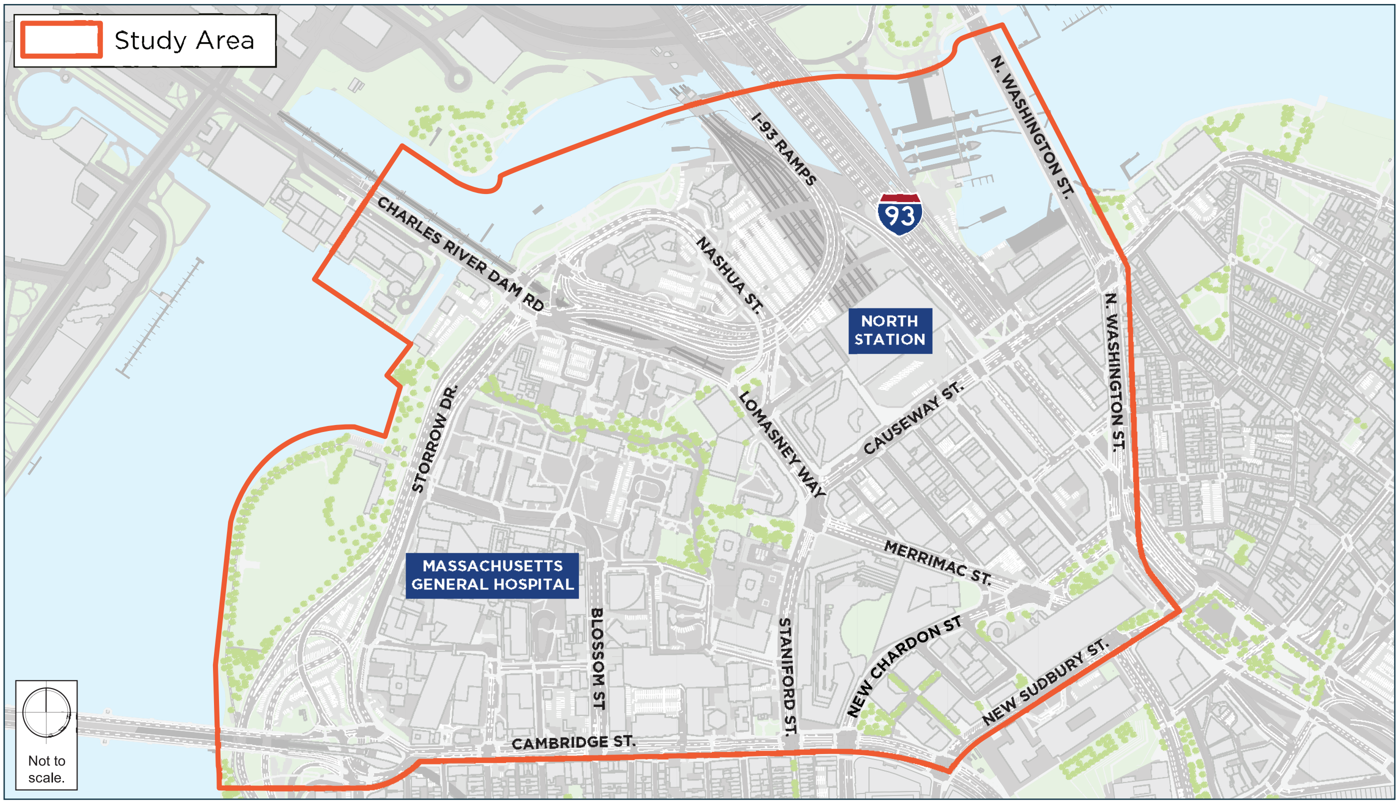
To create the plan, community comments were first translated into dozens of potential Action Items and supplemented with additional analysis by the consultant team. Community members were then asked to prioritize those that were most important to them while also considering feasibility and cost. The result is a broad look at the neighborhood's transportation system and a detailed set of Action Items to improve it.

This effort is being led by the Boston Planning and Development Agency (BPDA) and the Boston Transportation

Department (BTD), with core team members from the Mayor's Office of Neighborhood Services (ONS) and the Boston Public Works Department (PWD). The City hired a consultant team, led by Howard Stein Hudson, including NBBJ and Marlene Connor Associates. The Action Plan was funded by several North Station Area development teams, major property owners and institutions, including Massachusetts General Hospital (MGH), Delaware North (the owners of the TD Garden), Equity Residential, AvalonBay Communities, Related Beal, Boston Properties, HYM Investment Group, and Trinity Financial.

Engaging with State agencies and other stakeholders was a vital part of this process. Agencies the team worked with included the Massachusetts Department of Transportation (MassDOT), the Massachusetts Bay Transportation Authority (MBTA), the Department of Conservation and Recreation (DCR), the Massachusetts Port Authority (Massport), the Massachusetts Convention Center Authority (MCCA), and the Central Transportation Planning Staff (CTPS). Other institutional stakeholders consulted during the process included A Better City, the Seaport Transportation Management Association (Seaport TMA), the Charles River Transportation Management Association (CRTMA), MGH, and the Downtown North Association (DNA). Through the community engagement process many more groups were represented in public meetings and in conversations, including the West End Civic Association, the Beacon Hill Civic Association, TransitMatters, the Boston Cyclists Union, LivableStreets Alliance, WalkBoston, and resident associations from several buildings in the area.

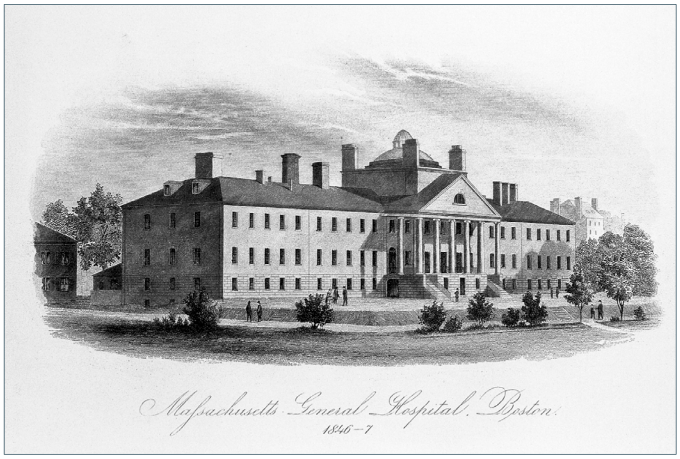
This Action Plan is intended to draw from the community's problems and ideas and create new mobility solutions that guard against unnecessary increases in motorized traffic associated with growth. **Section 2** covers the neighborhood's land use, its future development, and its existing and projected transportation network. It also includes the information shared by community members. **Sections 3** through **5** describe the planning process in detail and include the recommended improvements endorsed by the community. The final Action Plan is contained in **Section 6** of this report.



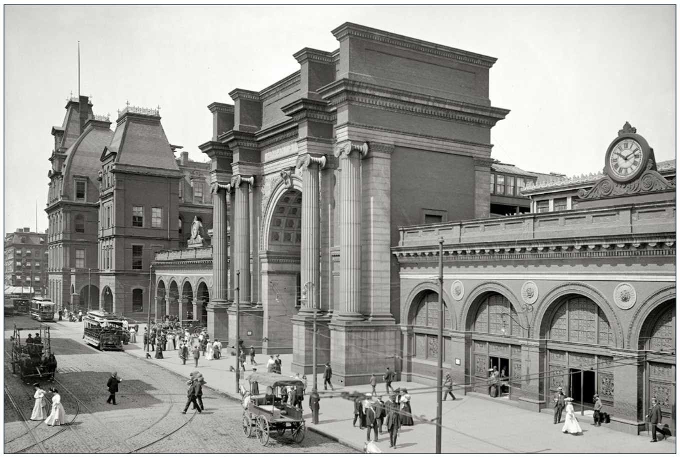
The North Station Area Mobility Action Plan's project area. Source: Howard Stein Hudson.

2. Existing Conditions

Land Use, Development, and Infrastructure

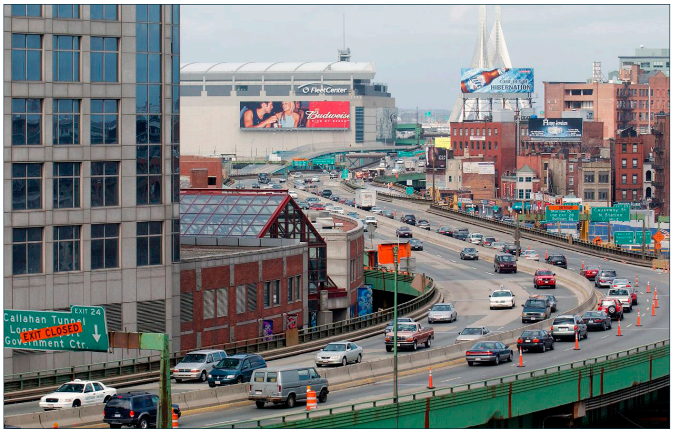


Massachusetts General Hospital, circa 1846. Image: Wikimedia.



Before North Union Station was completed in 1894, the Bulfinch Triangle hosted four passenger railroad stations operated by four separate railroad companies. Image: Shorpy Historical Photo Archive.

North Station and the Boston Garden, circa 1928. Image: The Leslie Jones Collection, Boston Public Library.



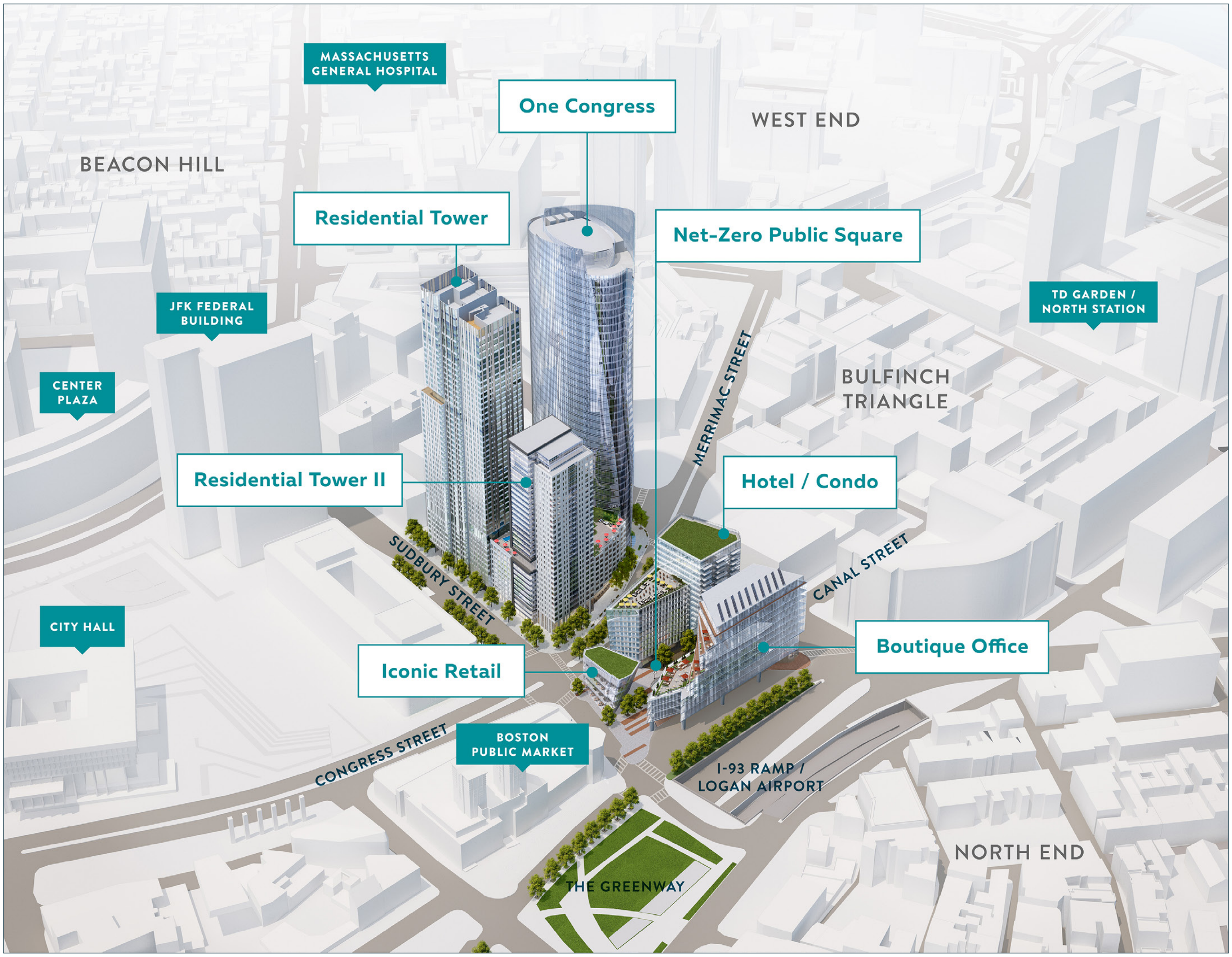
I-93 before the Central Artery Tunnel Project, also known as the Big Dig, with TD Garden (then known as the Fleet Center) and North Station in the Background. Image: 2003 Michael Dwyer.

The North Station Area has been front and center to many major changes in the City over the last 210 years. The Bulfinch Triangle was created by filling in what was known prior to 1807 as the Mill Pond, using earth that once formed the peak of Beacon Hill. Around 20 years later, railroads connecting many points to the north began to establish terminals in the neighborhood, starting its long history as one of two transportation hubs in the downtown core of Boston. When "North Union Station" opened its doors in 1894, it combined four local railroad terminals that existed at the time. In 1928, North Union Station was rebuilt to include the Boston Garden, which was replaced in 1995 by what is now TD Garden. Elevated train lines strung along local streets in the early 20th Century were removed in the 1970s and 1990s. In the 1950s, the Northeast Expressway (I-93) cut through the neighborhood. After hulking over the neighborhood for five decades, the highway was rebuilt underground as a part of the Central Artery/Tunnel Project (aka the 'Big Dig'), which opened fully in 2004, yielding several developable parcels upon which buildings have been completed or are under construction today.

Big changes have always been present in the North Station Area, and today is no different. The area retains its central place as a home for many residents, a sporting venue, a transportation hub, and part of downtown Boston's business community. The neighborhood is quickly becoming more residential, as well as adding a large, new retail center, hotels, and significant new office space (see **Figures 1** through **4** for more detail).

As a result of this development, residents will benefit from new amenities and services, including a full-service grocery store, making many daily trips more convenient and walkable. As the neighborhood grows, it will experience an increase in trips, but there is still room to influence how people will get around: their precise "mode split." Will people primarily walk, bike, take transit, or drive? Developers and the City have preliminary estimates for future trips by mode, but those actual choices will depend on what appears to be most convenient, least costly, and most enjoyable to the people who are making those choices. Much of this Action Plan seeks ways to encourage transportation choices that will reduce vehicular traffic impacts on the local neighborhood.

Due to the City and Commonwealth's focus on this rapidly changing neighborhood, a considerable amount of work designing and rebuilding local infrastructure is already underway. The Connect Historic Boston project, currently



Bulfinch Crossing, one of a handful of large development projects currently underway in the project area. Source: CBT Architects; HYM.

under construction, promises to improve conditions on Causeway and Staniford Streets for cycling and improve the pedestrian experience. The Longfellow Bridge project will have similar benefits for those crossing over to Cambridge. Still under design are significant improvements to the North Washington Street Bridge, which will bring protected bike lanes and a new priority bus lane over the Charles River from Charlestown; the South Bank Bridge, which will connect two sections of Boston's Harborwalk; and the Leverett Pedestrian Bridge, which will carry people safely over busy Charles Street to the Charles River Dam Road. The MBTA is also adding extra capacity to the Red and Orange Lines with new subway cars, and to North Station's Commuter Rail lines with an expansion of its draw-bridge over the Charles River from four tracks to six—a project that also includes a new bike path that will connect Nashua Street in Boston with North Point Park in Cambridge. Almost all existing signalized intersections will have upgraded operations and signal equipment to improve safety for all modes and to manage traffic better.

In sum, the extent of local development and infrastructure investment underway and planned in the North Station Area is already significant, solving many difficult challenges. This Action Plan seeks to build upon these existing commitments.

A rendering of the Hub on Causeway development, an office, residential, hotel, and retail complex marketed as a "city within a city."
Source: Gensler Architects; Boston Properties.

Figure 1. Existing Land Use, as of 2016

Source: MassGIS; BPDA.

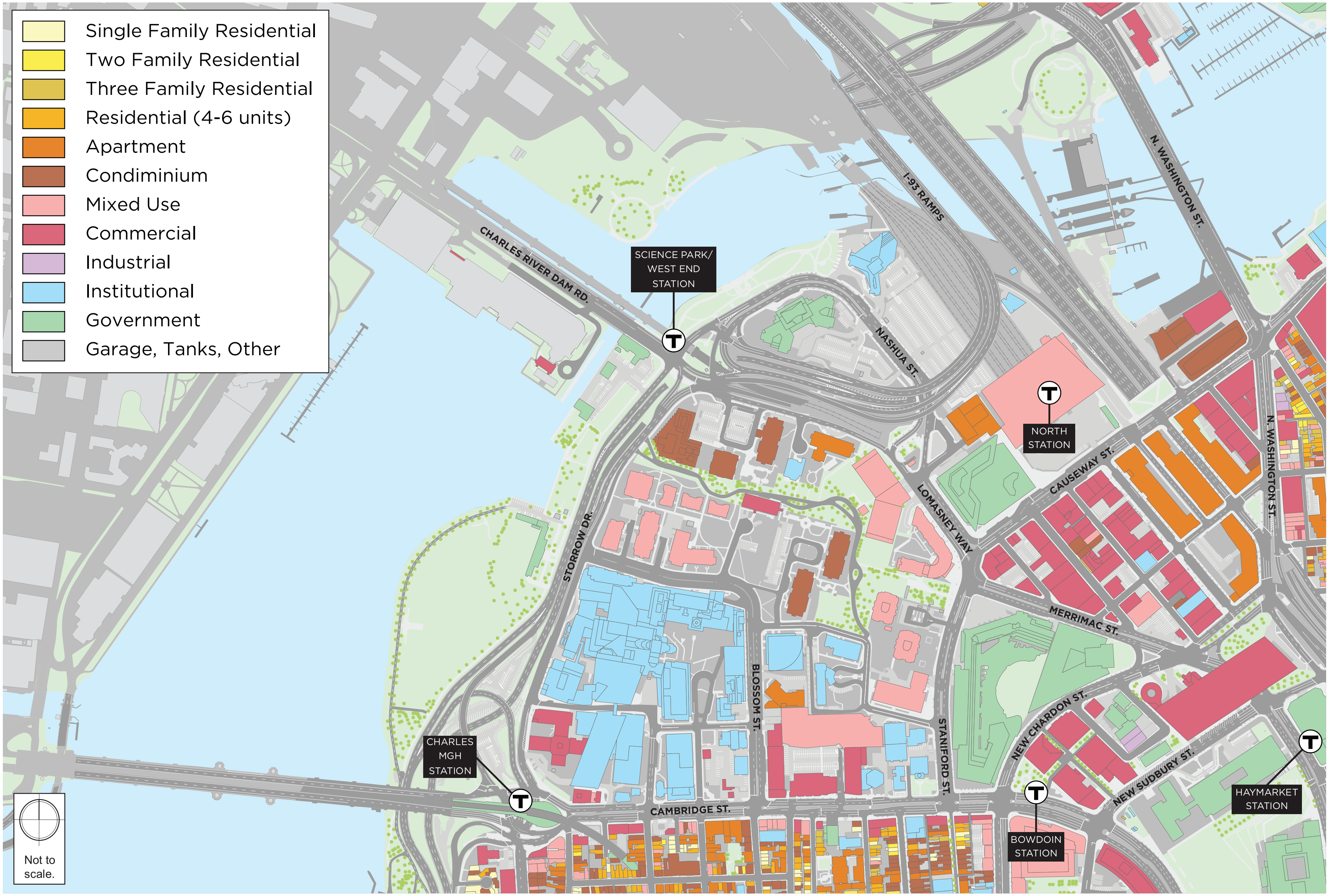
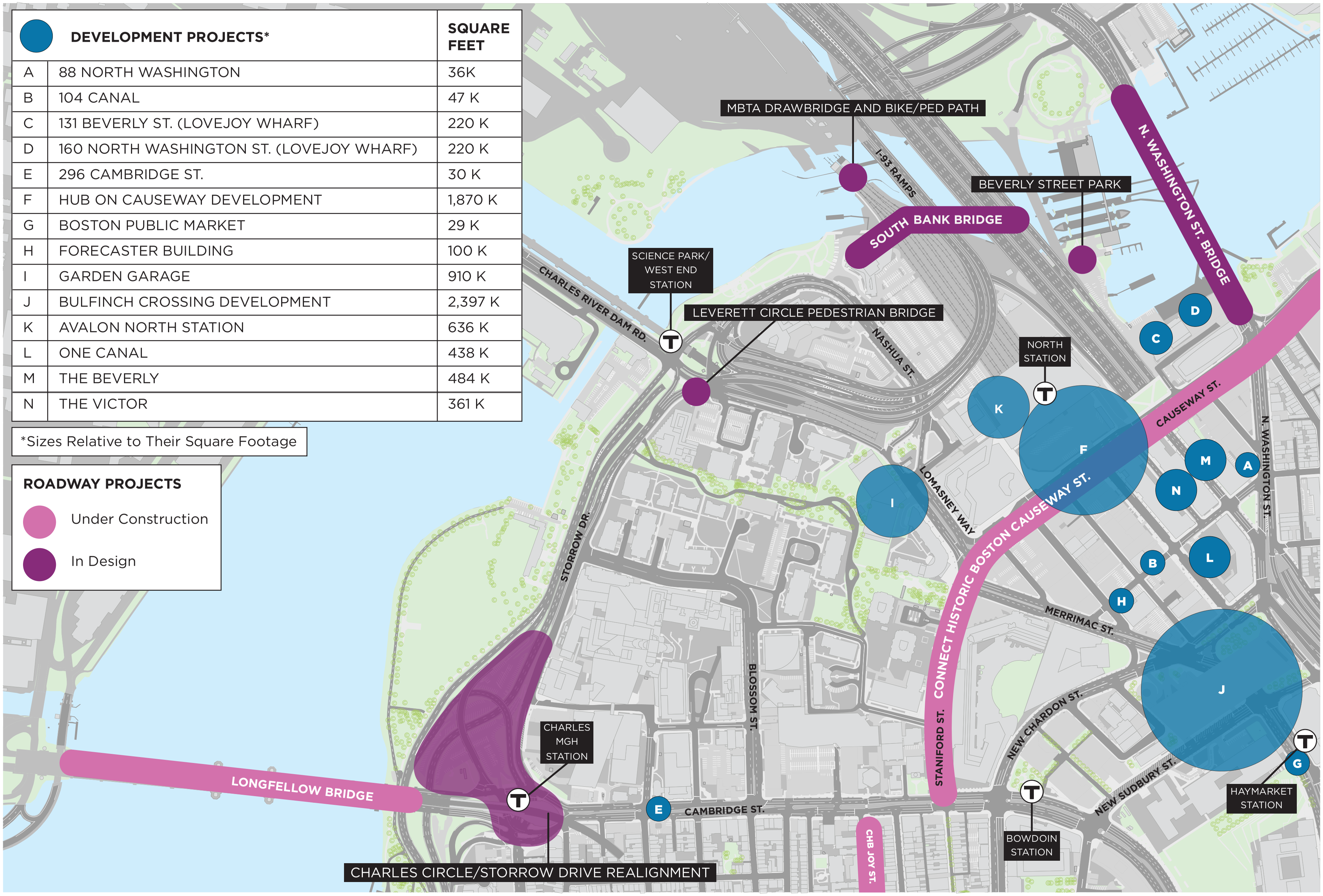


Figure 2. Project Area Development and Infrastructure

Source: MassGIS; BPDA; Howard Stein Hudson.

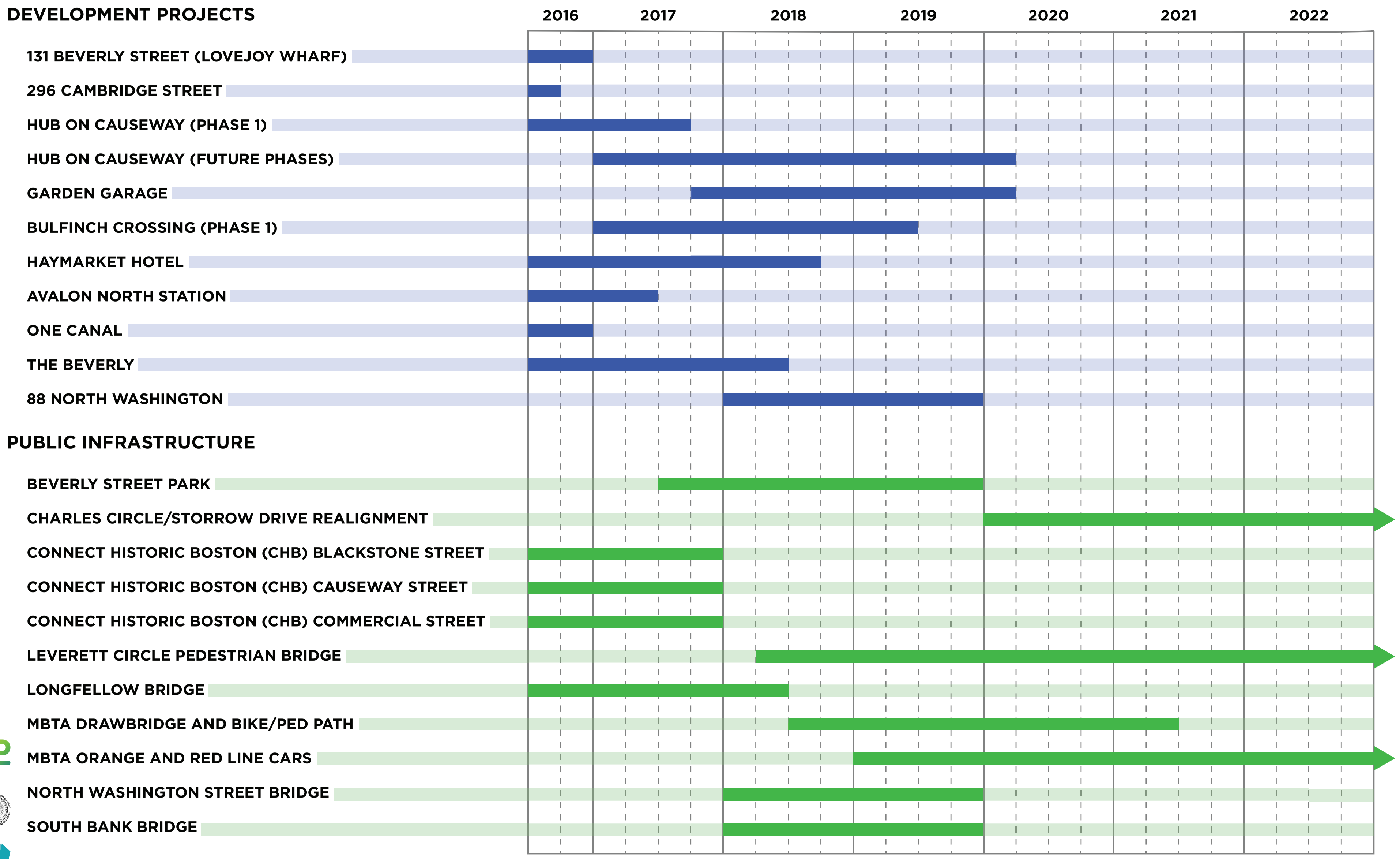


	● DEVELOPMENT PROJECTS*	SQUARE FEET
A	88 NORTH WASHINGTON	36K
B	104 CANAL	47 K
C	131 BEVERLY ST. (LOVEJOY WHARF)	220 K
D	160 NORTH WASHINGTON ST. (LOVEJOY WHARF)	220 K
E	296 CAMBRIDGE ST.	30 K
F	HUB ON CAUSEWAY DEVELOPMENT	1,870 K
G	BOSTON PUBLIC MARKET	29 K
H	FORECASTER BUILDING	100 K
I	GARDEN GARAGE	910 K
J	BULFINCH CROSSING DEVELOPMENT	2,397 K
K	AVALON NORTH STATION	636 K
L	ONE CANAL	438 K
M	THE BEVERLY	484 K
N	THE VICTOR	361 K

*Sizes Relative to Their Square Footage

ROADWAY PROJECTS
- ● Under Construction
- ● In Design

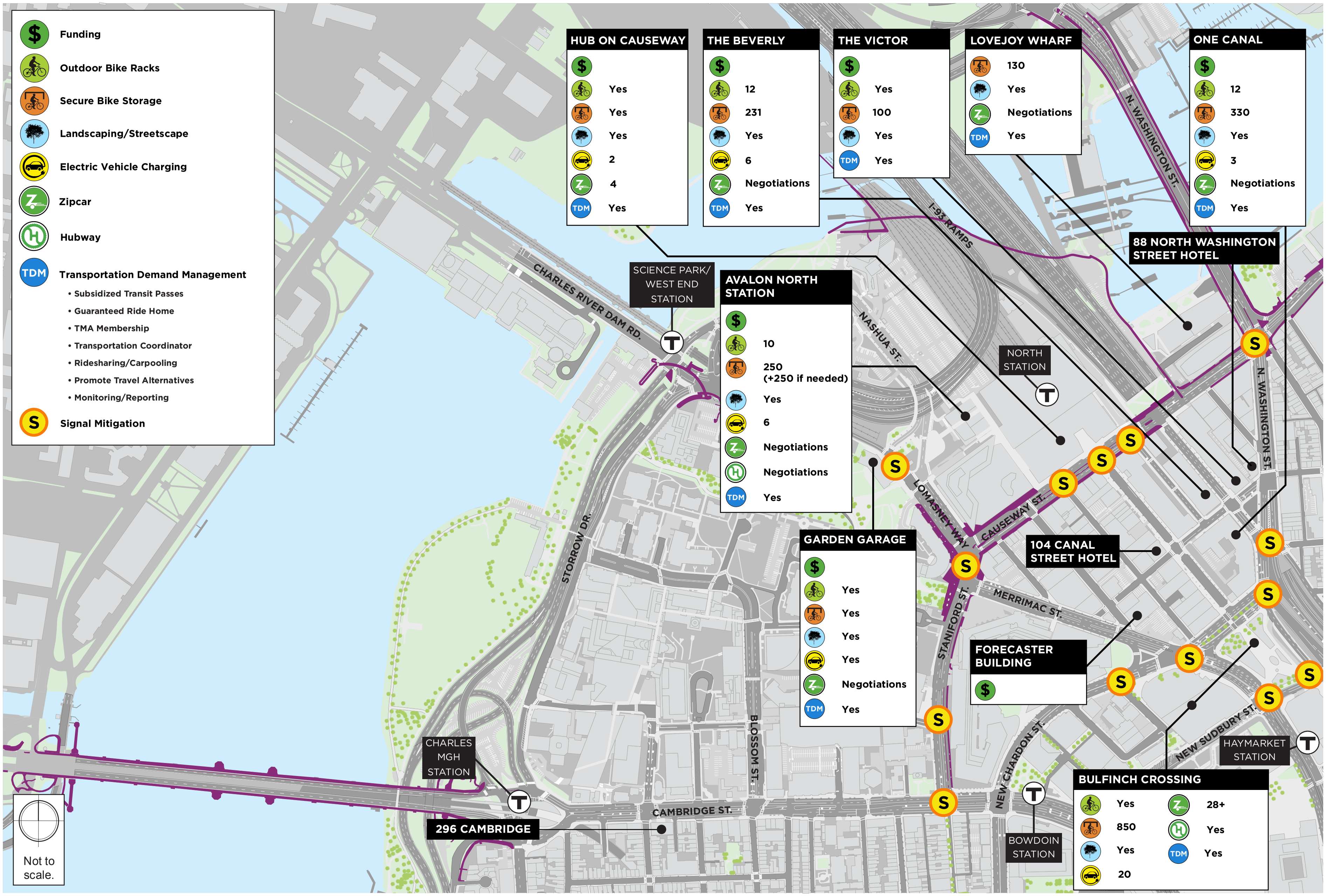
Figure 3. Estimated Infrastructure and Development Schedule, as of 2016



Source: Howard Stein Hudson; BPDA.

Figure 4. Future Area Development Mitigation

Source: MassGIS; BPDA; Howard Stein Hudson.



Pedestrian Environment

Unless they're flying overhead or tunneling underground, almost everyone who experiences the North Station Area can count themselves as a pedestrian, and most residents walk to work (50.8% of commuters in 02114 ZIP code[1]). The North Station Area's sidewalks, streetscapes, and paths are highly diverse; ranging from the tree-lined Thoreau Path to the buzz of Causeway Street, and from the green banks of the Charles River to the concrete canyons near the Edward Brooke Courthouse and the Government Services Center. As would be expected, the level of comfort of these walkways also has a wide range.

Analyses of the existing sidewalk network (**Figure 5**), the sidewalk network with committed improvements added (**Figure 6**), and pedestrian delay at traffic signals (**Figure 7**) identified problem areas that were later confirmed by public comments. Overall, the neighborhood has a far more extensive pedestrian network than it does a street network. The pedestrian has many routes that are more direct than any vehicle, but to which access may be limited, either by physical ability or knowledge that the route exists. These include the Thoreau Path, the non-ADA compliant staircases between Sudbury and Hawkins Streets, or even the halls of MGH which the expert user can use to get to the Charles/MGH Station from Blossom Street (a quarter of a mile distant).

Many sidewalks suffer from being next to "unfriendly" buildings, such as the sidewalks on New Chardon Street passing by the stark cement walls of the Government Center Garage, or from being next to heavy traffic, such as Charles Street's sidewalk from MGH to the Science Park MBTA Station, which runs alongside a traffic jam that is as many as nine-lanes wide in the p.m. peak hour. Martha Road was also singled out for speeding, several wide driveways with low visibility, and a narrow sidewalk that is often filled with bicyclists who do not feel safe on the street. Accessibility issues were identified in the area as well, including narrow or obstructed sidewalks on O'Connell Way, Friend Street, Valenti Way, and Lancaster Street.

The North Station Area has many highlights for pedestrians, including (top to bottom): Thoreau Path, the park-like environment inside the MGH campus, the plaza inside the Government Services Center building, and the Nashua Street Park along the Charles River. Images: Halvorson Design Partnership and Howard Stein Hudson.

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[1] Commuting Characteristics by Sex, 2011-2015 American Survey 5-year Estimates for ZIP code 02114 at factfinder.census.gov (02114 also includes a small portion of Beacon Hill).

Community comments also showed several problems for people with disabilities and all pedestrians at Charles Circle. An emergency exit from the Charles/MGH MBTA Station that was not intended to be used on an everyday basis lies on a path pedestrians find useful, and therefore is heavily used. Once outside, there is no crosswalk or signal to stop traffic, and people with disabilities are stranded without accessible ramps nor sufficient sidewalk widths.

Another broad theme in the commentary is around wayfinding. Many people—particularly those new to the neighborhood or visiting MGH—are not aware of the fastest walking routes to major destinations. This is due to the unintelligibility of the extensive pedestrian network, which often cuts through narrow passageways between buildings, through alleys, and across major streets at unmarked crossings. Additionally, some of these walkways were said to be unsafe at night due either to low lighting or lack of "eyes on the street."

Connectivity to the Charles River Esplanade, Nashua Street Park, and other parts of Boston's Harborwalk is also lacking, with the rest of the neighborhood having little to no indication that these great natural resources are nearby. These parks are so difficult to access that they are often not thought of as local, everyday amenities or through-ways, but instead as destinations to visit only when time permits.

The Bulfinch Triangle, one of the area's oldest street networks, offers a more typical urban street feel. Much of the new residential development is proximate to or located here, and as a result the Triangle is quickly transforming from a TD Garden event-driven economy to one that hosts people every day and evening in its bars, restaurants, and other attractions. On peak hours in this neighborhood, pedestrians overpower motor vehicles for space on streets, sparking community discussions about implementing a pedestrian-priority condition on Canal Street or elsewhere.

Large developments at the north and south ends of Canal Street are likely to put far more pedestrians on this street in particular. At the north end of Canal Street, the new Hub on Causeway development will add 210,000 square feet of retail space and 1.3 million square feet of office, hotel, and residential space. This one project alone represents nearly half of the trips that will be added to the neighborhood by new development, and its main entrance, including the entrance for North Station and the TD Garden, sits directly across from Canal Street. Additionally, the City of Boston has partnered with the MCCA, MassDOT, Massport, and the Seaport TMA to make the necessary investments to bring new ferry service to Lovejoy Wharf—another potential attraction for pedestrians. On Canal Street's southern end, the planned Bulfinch Crossing development on the site of the existing Government Center Garage will gradually

A rendering of the entrance to the Hub on Causeway project, which will combine the entrance to North Station and TD Garden opposite the end of Canal Street. The new entrance is likely to focus more pedestrian activity onto Canal Street. Image: Delaware North.

TD Garden and North Station create pedestrian desire lines through the Bulfinch Triangle. Image: Howard Stein Hudson.

add 2.9 million square feet of office and residential space with a smaller retail component. This will function as an important bookend to Canal Street, delineating a straight path on Canal Street to North Station for people walking from Congress Street northbound (upwards of 1,500 people per hour at p.m. peak) who today might find that direct line on Friend Street. See **Figures 8** and **9** for estimates of the existing pedestrian flow extrapolated from counts at many of the intersections in the Triangle. Between the physical changes that are likely to focus pedestrian flows on Canal Street and the increased pedestrian flow to new developments, Canal Street foot traffic is estimated to grow by as much as 300%, making it comparable to the pedestrian flows in Downtown Crossing—Boston's central pedestrian zone—which likely has the highest number of pedestrians anywhere in the City.

Another significant change for pedestrians will come with the redevelopment of the Garden Garage into a large residential building. Though the project is projected to bring far fewer trips to the neighborhood than the nearby Hub on Causeway, it will open up sight lines to Thoreau Path, one of the neighborhood's strongest pedestrian assets. The development will create a new connection to Thoreau Path at the Nashua Street/Lomasney Way/Martha Road intersection and will alter how pedestrians cross Lomasney Way to access North Station. Many MGH workers and visitors use this route daily.

The pedestrian environment in the North Station Area is changing quickly, and many infrastructure and development projects include improvements to the streetscape that could incrementally improve the quality of life for local residents. However, there are many opportunities for improvements that remain unaddressed.

Figure 5. **Existing Pedestrian Level of Comfort, as of 2016**

Source: MassGIS; All analysis done by Howard Stein Hudson Staff.

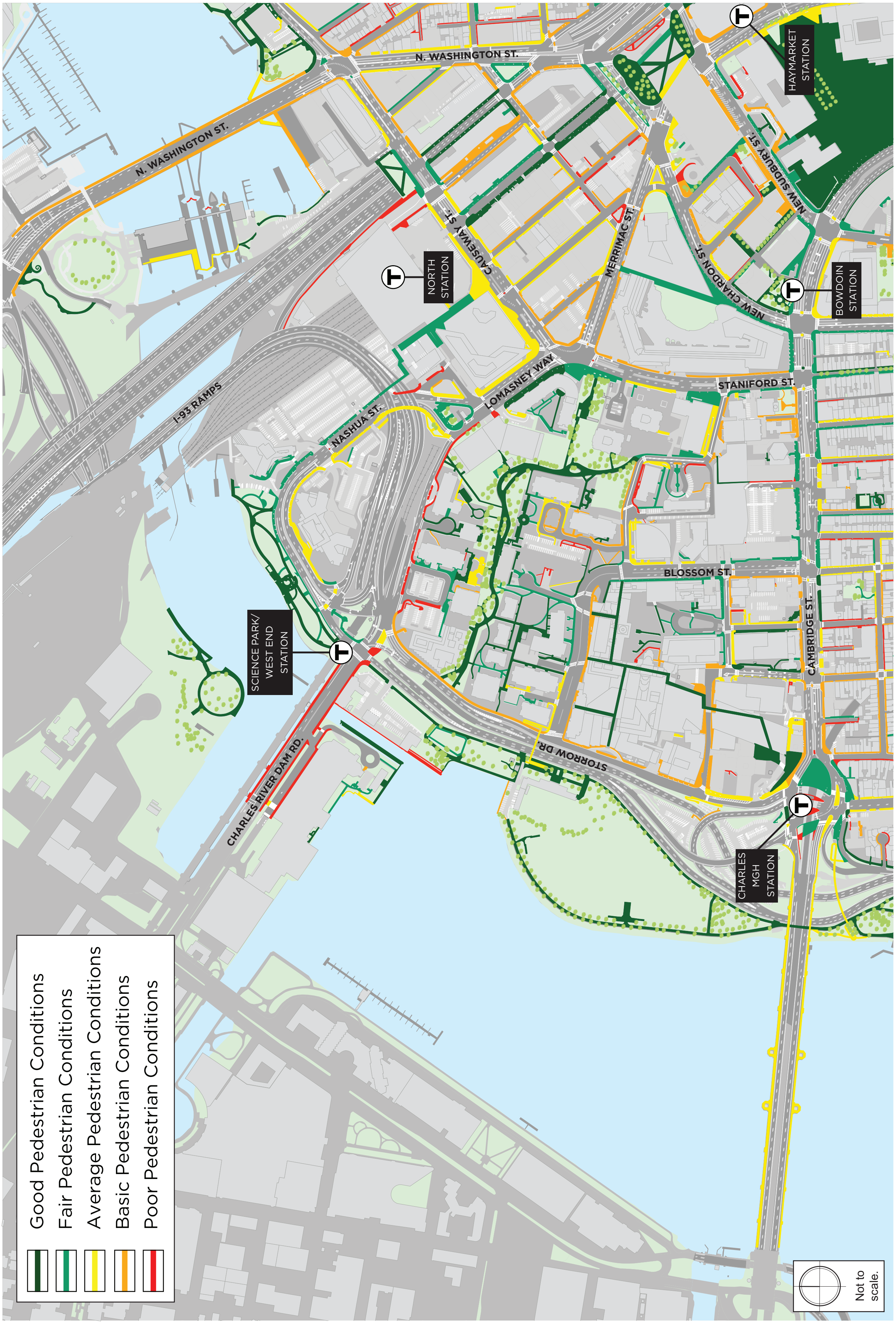
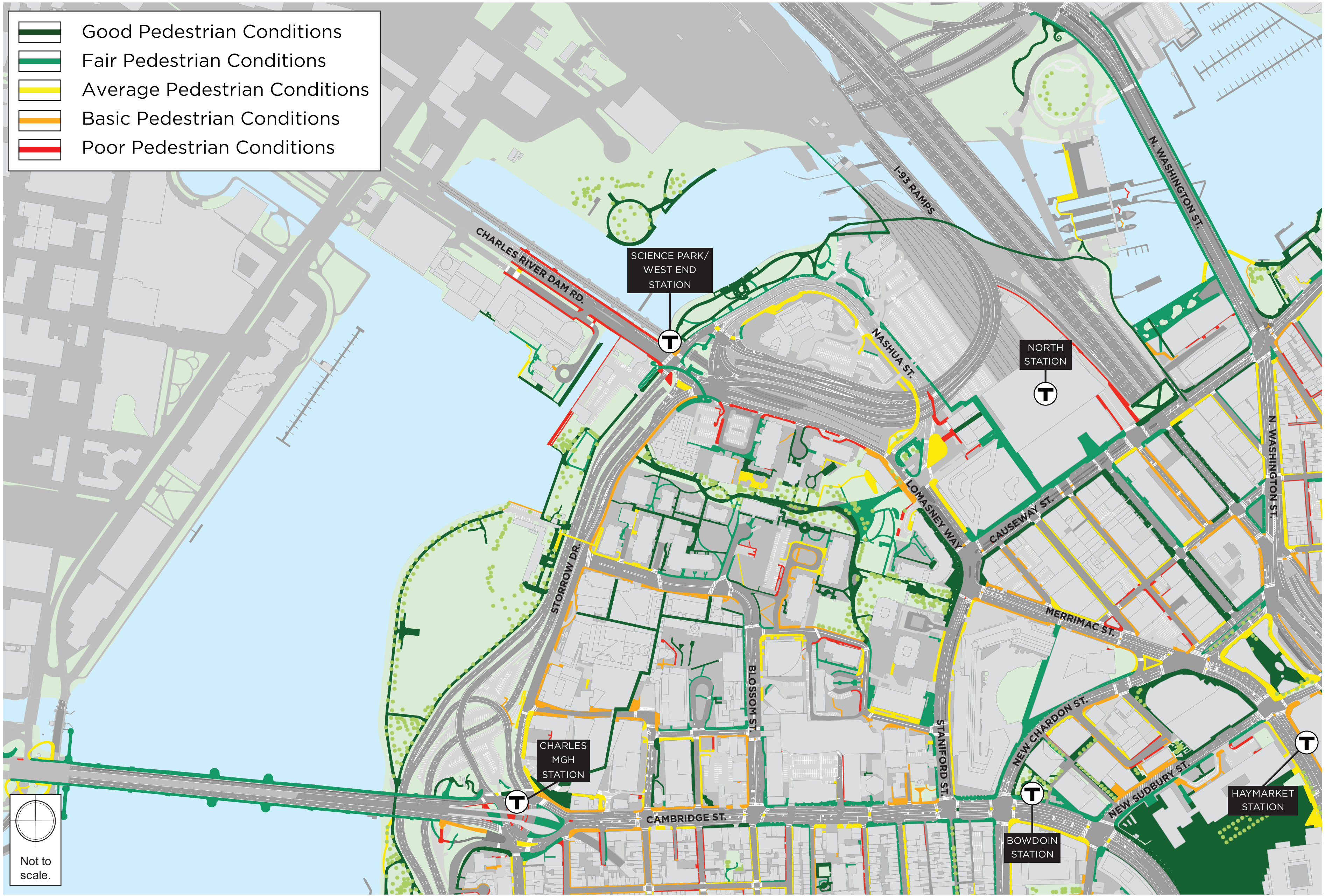


Figure 6. Future Pedestrian Level of Comfort Assuming Committed Pedestrian Improvements*

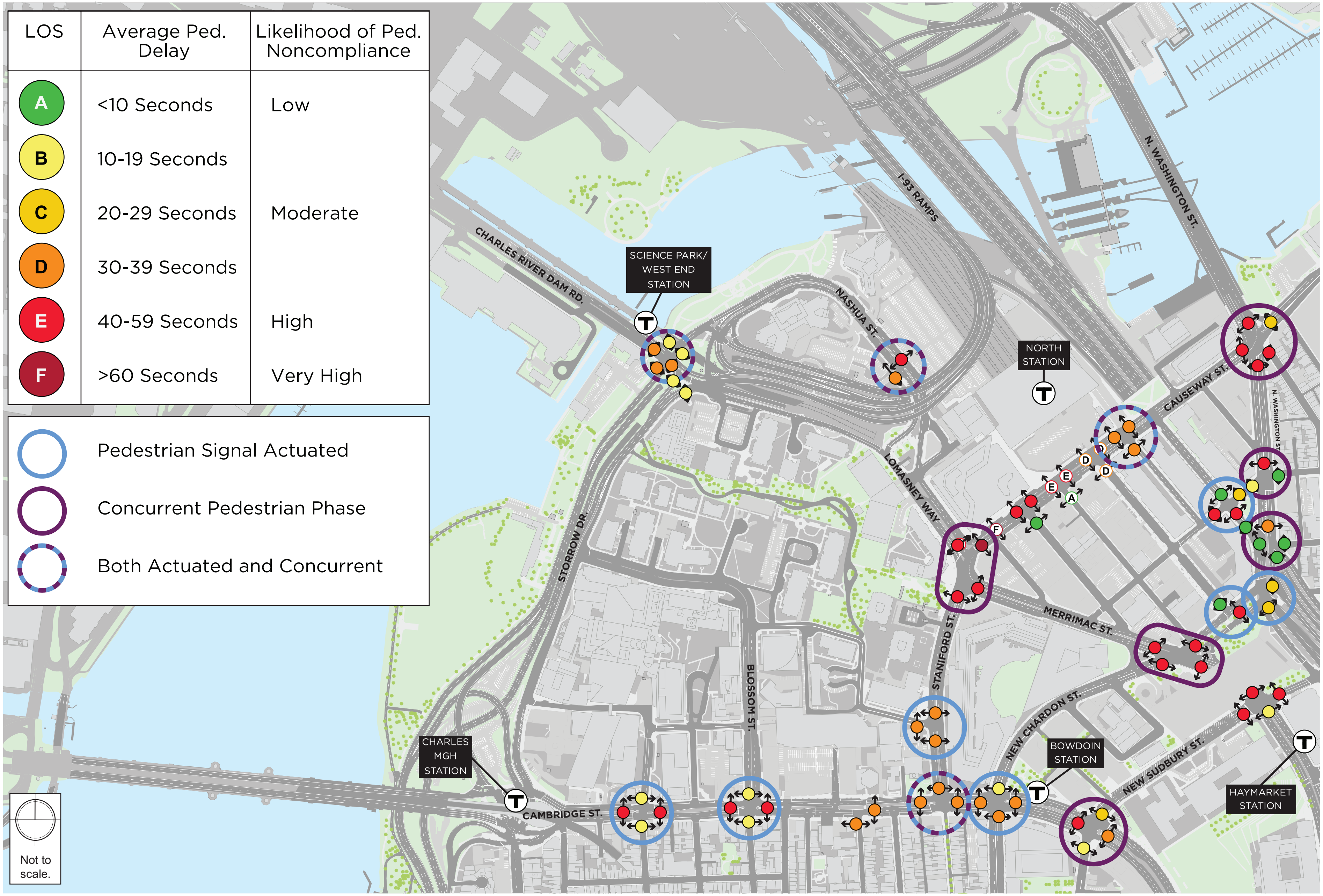
Source: MassGIS; All analysis done by Howard Stein Hudson Staff.



** Includes all sidewalk, bridge, and path related improvements detailed on pages 48-52.*

Figure 7. **The Average Delay Experienced by Pedestrians Using Signals in the North Station Area**

Source: MassGIS; Highway Capacity Manual 2010 Edition.



LOS	Average Ped. Delay	Likelihood of Ped. Noncompliance
A	<10 Seconds	Low
B	10-19 Seconds	
C	20-29 Seconds	Moderate
D	30-39 Seconds	
E	40-59 Seconds	High
F	>60 Seconds	Very High

○	Pedestrian Signal Actuated
○	Concurrent Pedestrian Phase
○	Both Actuated and Concurrent

Figure 8. **a.m. Peak Hour Pedestrian Flow**

Source: MassGIS; Manual Turning Movement Counts (TMC's) and vehicle classifications were conducted during the weekday a.m. and p.m. Peak Periods for the study area intersections. Vehicle classification counts included car, truck, pedestrian, and bicycle movements.

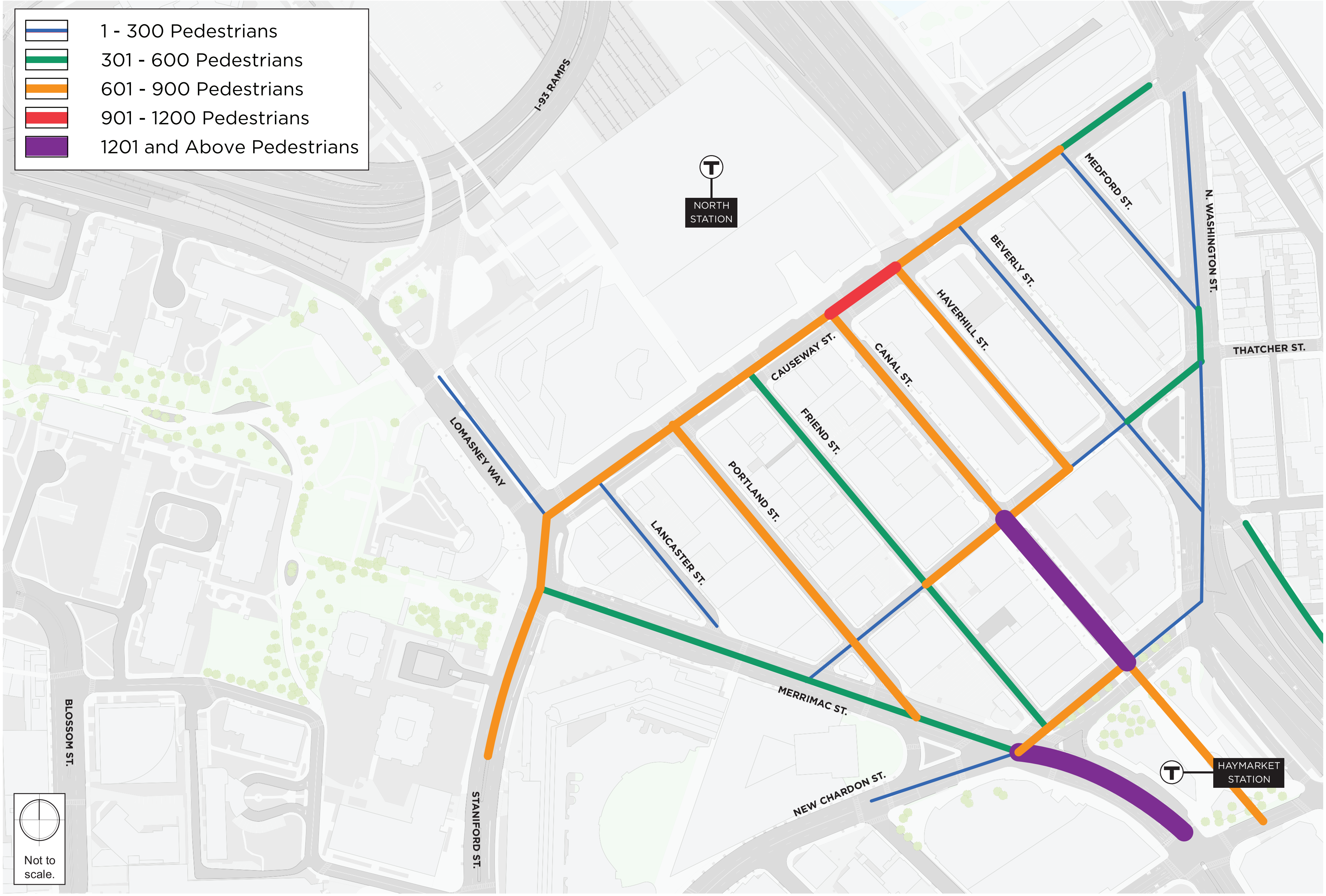
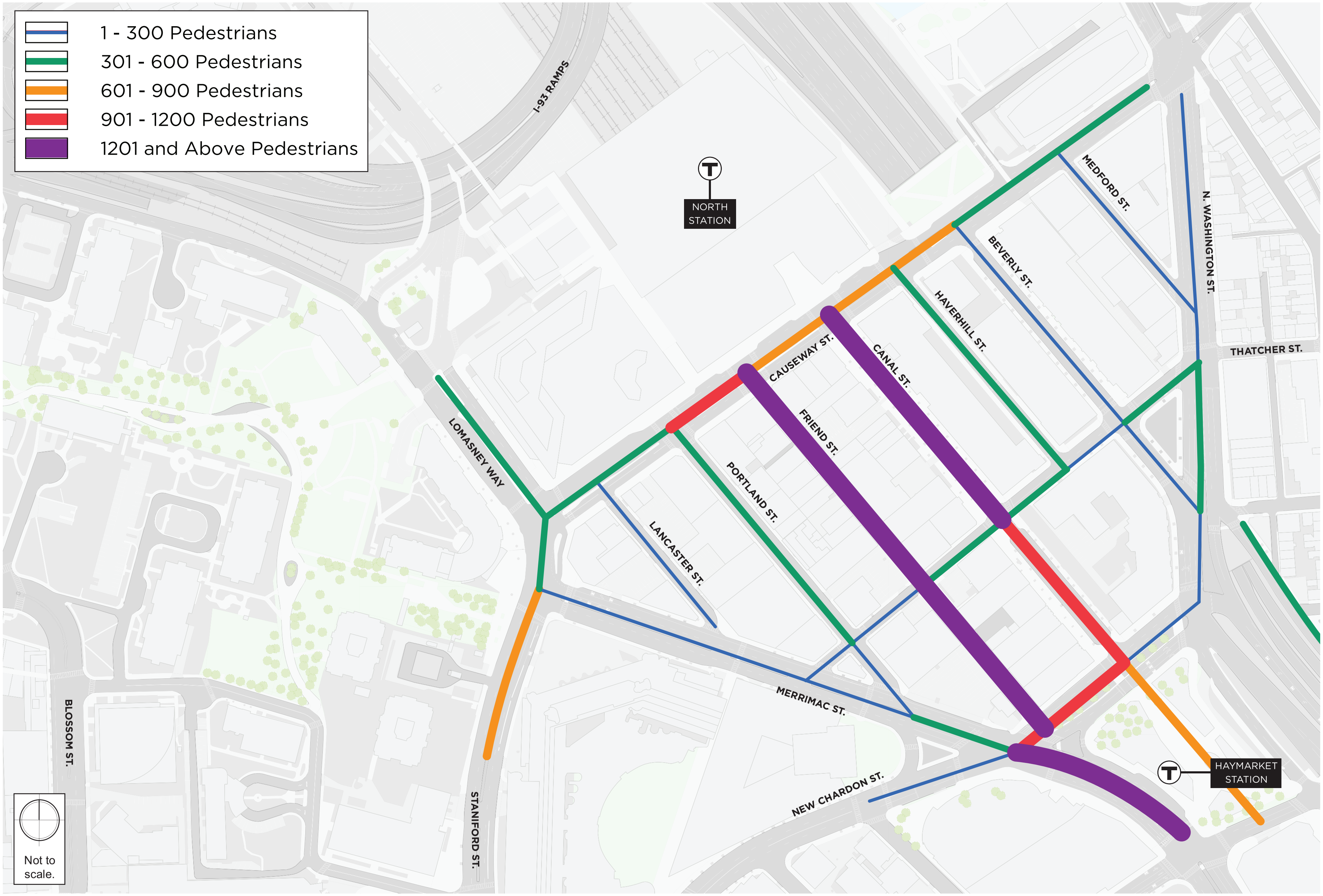


Figure 9. p.m. Peak Hour Pedestrian Flow

Source: *MassGIS; Manual Turning Movement Counts; Vehicle Classification Counts.*



Quality of Place

Canal Street's pedestrian traffic makes it a strong candidate for a placemaking effort. Image: Howard Stein Hudson.

The quality of a place can influence the choices people make about how they choose to travel through, to, or from it. A place that is enjoyable enough to stop and observe from a well-placed bench is likely to be perceived as a nice place to walk, take transit from, or ride a bike around, while a place that is cold and uninviting might be a better place to get a ride to or drive through so as to avoid it altogether. Place quality can also influence changes in the availability of local services—the more people feel comfortable there, the more a place looks like a viable place for retail stores and restaurants. In this way, a quality place can help the neighborhood grow in ways that improve conditions for local residents and commuters.

Many places in the North Station Area have relatively recently come out from under the shadow of the Central Artery and elevated portions of the Green Line. A significant portion of the Bulfinch Triangle is entirely new, and the first reconstruction of Causeway Street since the elevated tracks were removed is currently underway. The changes not only create new visibility and sunshine for storefronts, but also bring new residents and commercial activity to the neighborhood. That vibrancy is a trait that business owners seek when locating a new café or retail outlet. Finally, new services in a community help shorten trips, as more services are offered within walking distance to local residents.

Using community input and observations of pedestrian traffic, the NSAMAP project team identified key opportunity areas in the North Station Area for improving place, also known as "placemaking." These locations are areas where public space can be created or is already available and significant pedestrian numbers provide opportunities to entice people to stay and enjoy a place. Transit access was also considered a benefit.

Canal Street, which currently hosts nearly 2,000 pedestrians an hour at its busiest times of day, is one of the North Station Area's strongest candidates for placemaking. When the Hub on Causeway and Bulfinch Crossing developments are both complete on either end of Canal Street, the number of people walking here is likely to more than double, pulling in people who walk on Friend Street today, as well as hundreds of new people accessing over 200,000 square feet of new retail space at Canal and Causeway Streets.

Blossom Street, a near constant confluence of patients, students, and staff of MGH also has placemaking potential. There is currently more pavement here than is necessary to handle local traffic, and the area already hosts one food truck daily. Parking is accommodated in nearby parking garages, making on-street parking here a luxury. A small portion of this excess street space could be used to create a place for people to sit, eat, and enjoy their work-breaks, or pause after a health-related visit. Projects like these can also solidify clear identities for sub-districts.

Placemaking efforts will help both residents and visitors access desired destinations while making the experience more enjoyable and unique.

Curbside Use / Flex Zones

The part of the street closest to the curb has many uses and is referred to in many ways. Some prefer the term "curbside," which can sometimes be perceived as defining its use as separate from the uses of the rest of the street. More recently the term "flex zone" has been introduced as this term encompasses all possible uses—including the use of the space for transportation for cars, buses, or bicycles. Streets in the project area currently use curbside or flex zone space for a variety of parking uses, motor vehicle travel lanes, shuttle stops, bus stops, and bike lanes.

Given recent changes in the neighborhood, these existing curb space regulations may not incorporate all existing local needs. Shuttle stops dominate all of Haverhill Street, though the street was originally designed to have two travel lanes. Parts of Beverly Street's flex zone are used for vehicle travel lanes but many often park there anyway. There is metered parking on Canal Street, Portland Street, New Chardon Street, Blossom Street, and parts of Cambridge Street. Friend Street's flex zone is currently unregulated. Commercial parking is located in a few locations in the project area, but some areas without designated commercial parking generate complaints as commercial vehicles tend to double park to make their deliveries and pickups—such as Haverhill Street, O'Connell Way, and parts of Staniford Street.

New development, such as a renovation at 50 Staniford Street, will help correct some of these local issues; however some, such as those in the complex Bulfinch Triangle, may need closer attention. See **Figure 10** for the existing curb use in the project area, and **Figure 11** for the available off-street parking in the area. The North Station Area's use for events has resulted in ample off-street parking resources that should also be kept in mind when considering curbside uses. Off-street parking prices during weekdays when there are no events are among the cheapest in downtown Boston.

Commercial loading is in demand on narrow streets in the Bulfinch Triangle, such as on Friend Street, pictured here. Image: Howard Stein Hudson.

Figure 10. On-Street Curb Use

Source: *MassGIS; field observation.*

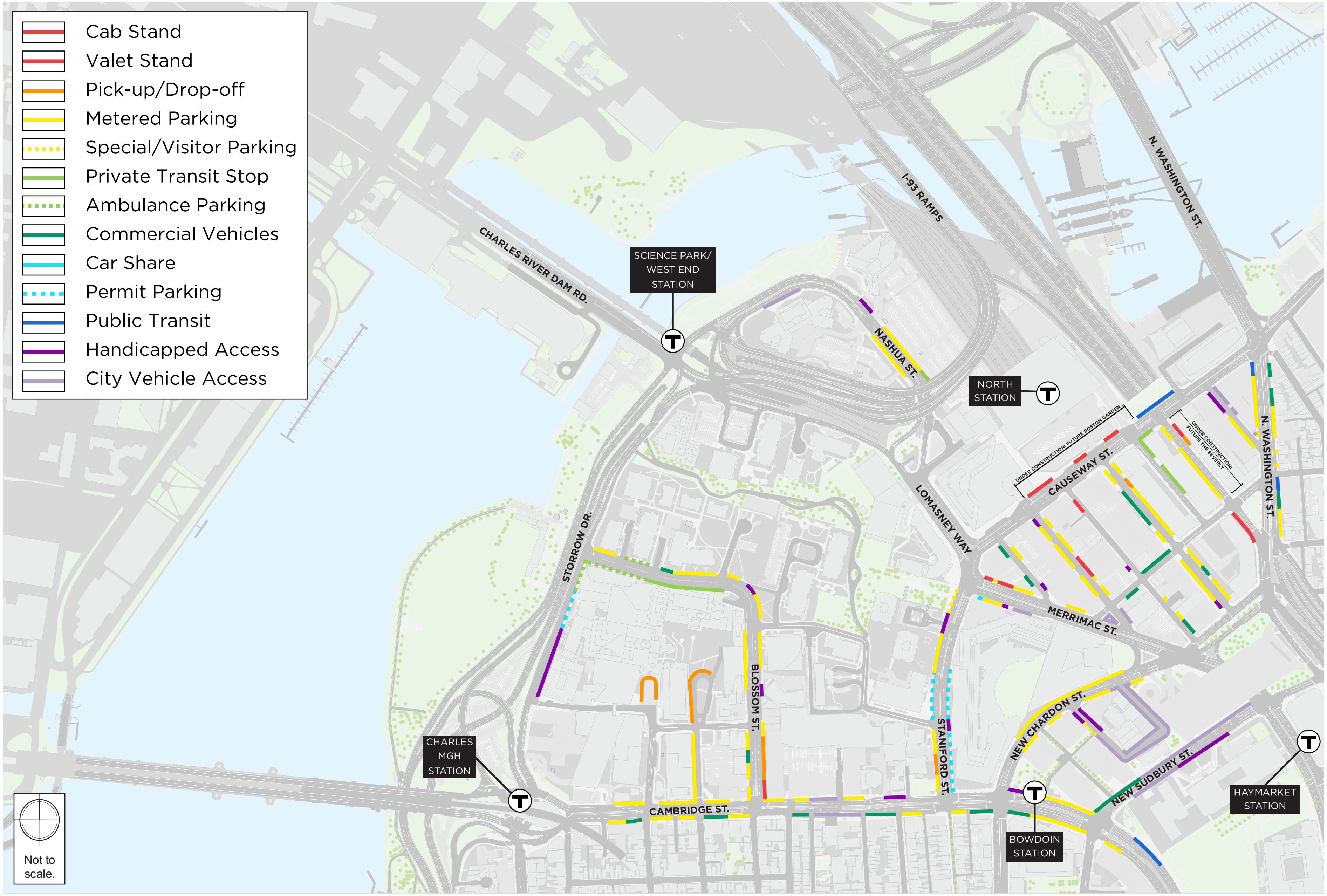
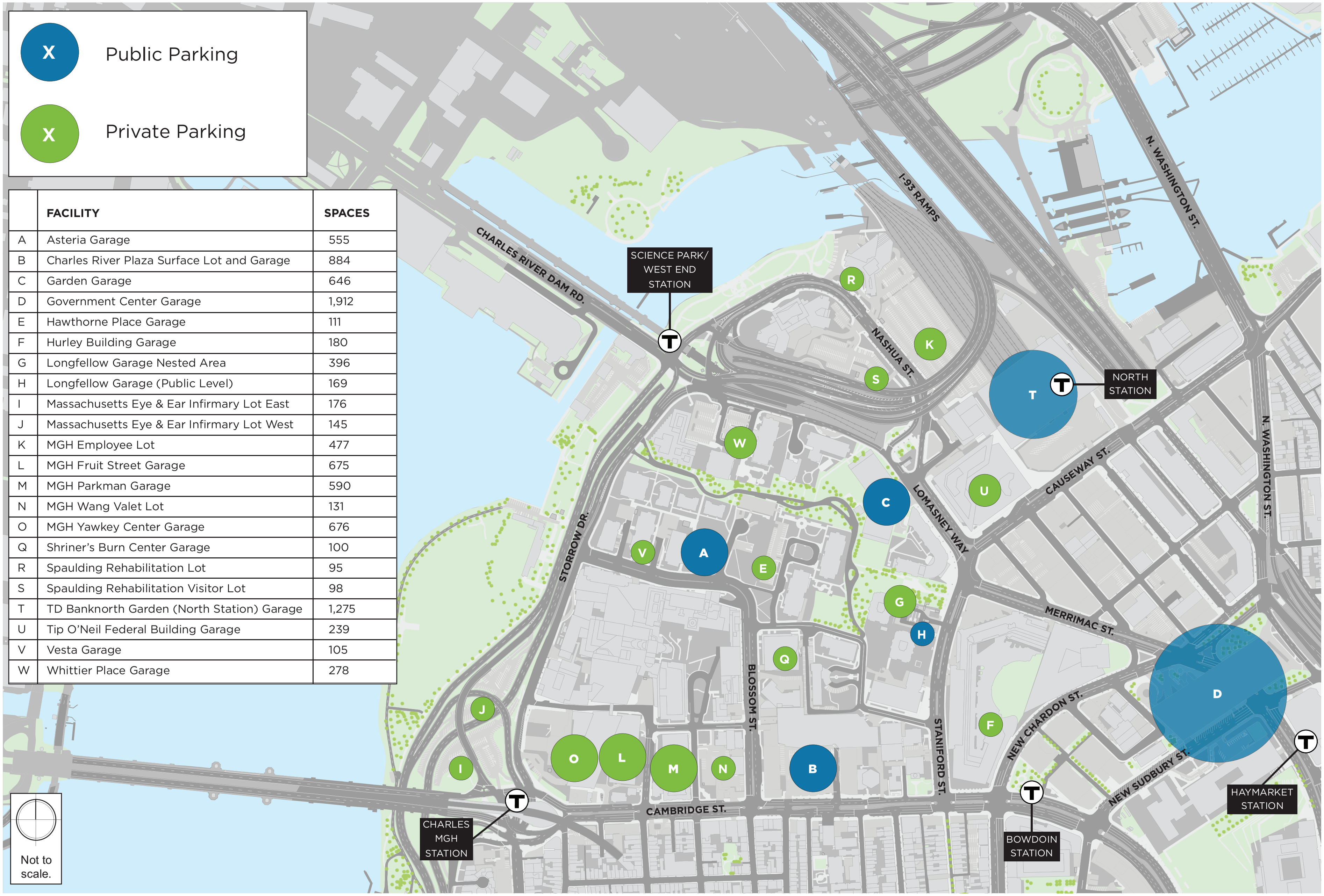


Figure 11. Off-Street Parking in the Area

Source: MassGIS; BPDA; Howard Stein Hudson.



	FACILITY	SPACES
A	Asteria Garage	555
B	Charles River Plaza Surface Lot and Garage	884
C	Garden Garage	646
D	Government Center Garage	1,912
E	Hawthorne Place Garage	111
F	Hurley Building Garage	180
G	Longfellow Garage Nested Area	396
H	Longfellow Garage (Public Level)	169
I	Massachusetts Eye & Ear Infirmary Lot East	176
J	Massachusetts Eye & Ear Infirmary Lot West	145
K	MGH Employee Lot	477
L	MGH Fruit Street Garage	675
M	MGH Parkman Garage	590
N	MGH Wang Valet Lot	131
O	MGH Yawkey Center Garage	676
Q	Shriner's Burn Center Garage	100
R	Spaulding Rehabilitation Lot	95
S	Spaulding Rehabilitation Visitor Lot	98
T	TD Banknorth Garden (North Station) Garage	1,275
U	Tip O'Neil Federal Building Garage	239
V	Vesta Garage	105
W	Whittier Place Garage	278

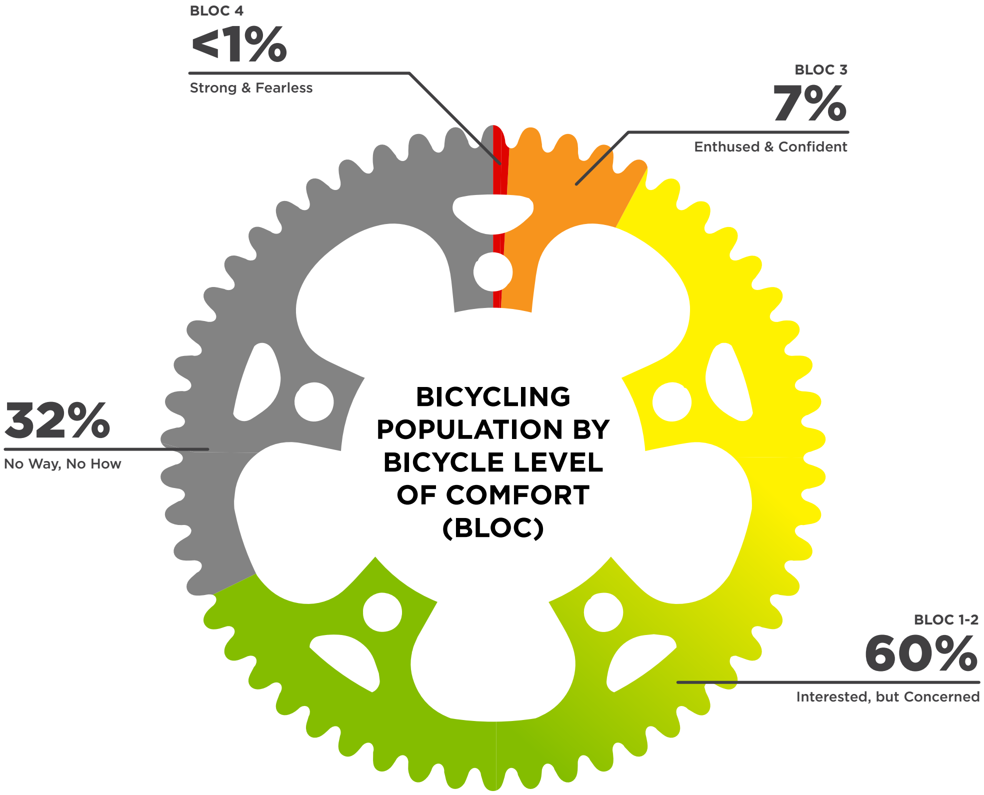
Bicycle Environment

To understand how bicyclists perceive the neighborhood, the Action Plan team conducted a Bicycle Level of Comfort analysis. The analysis uses traffic volumes and speeds, roadway widths, the presence or non-presence of bike infrastructure, and other factors to determine who would feel safe riding on local streets. According to some studies, more than half of the general population is interested in bicycling for transportation, but are too concerned about safety to bike to work. Another 7% of people could be encouraged to ride despite their concerns, and around 1% will ride in almost any traffic condition. Bicycling is not for everyone, and around a third of people would not ride under any condition. When these percentages are applied to the Bicycle Level of Comfort analysis, one can see where in the neighborhood most people would feel safe riding a bike and where only the brave would venture.

The analysis shows some existing safe-biking networks in Beacon Hill and the North End, as well as a significant improvement in safety connecting the two existing networks via the Connect Historic Boston protected bike lane project, which is currently under construction. Cyclists traveling from the Seaport, Financial District, or many other locations to the North Station Area, however, have no safe way to access the Charles River Esplanade, the Longfellow Bridge, or the Charles River Dam Road. Cambridge Street, Nashua Street, Lomasney Way, North Washington Street, and Merrimac Street all cater only to the “strong and fearless” among cyclists.

The North Washington Street Bridge is also foreboding to cyclists today, but a scheduled near-term reconstruction project will bring most of the bridge within reach for the

Bicyclists in the area will see improvements on Causeway and Staniford Streets with the completion of the Connect Historic Boston protected bike lanes there, but still don’t have a designated bikeway between the center of the project area and the Charles River bridges. This cyclist uses Nashua Street to get to the river. Image: Howard Stein Hudson.



Four types of transportation cyclists in Portland, OR by proportion of population. Source: Dill, J. Michael (2012).

"interested but concerned" cyclists of Boston with a pair of protected bike lanes. Another project to add a bike path to a reconstructed MBTA drawbridge will create an access route between Nashua Street and two parks on the north bank of the river: North Point Park in Cambridge, and Paul Revere Park in Charlestown. The South Bank Bridge, another project being designed by DCR, will connect Nashua Street to Beverly Street on the Boston side of the Charles River, extending the Harborwalk and providing a new bike route that will be comfortable for "interested but concerned" riders. See **Figures 12** and **13** for the full analyses.

Bicycle commuters are missing a low stress network connection from Downtown Boston to points north. Image: Howard Stein Hudson.

Figure 12. **Existing Bicycle Level of Comfort**

Source: MassGIS; Peter Furth. All analysis done by Howard Stein Hudson Staff.

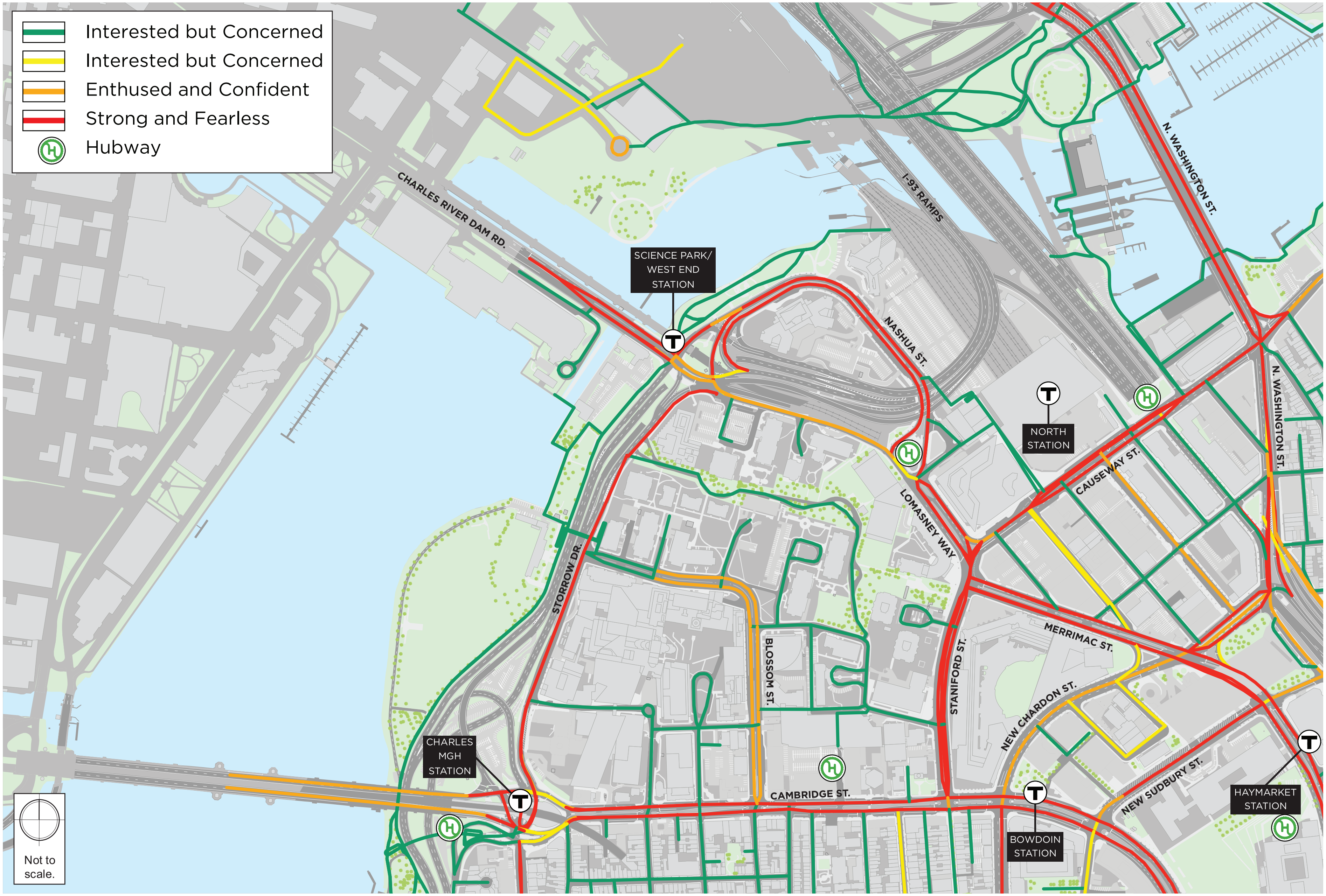
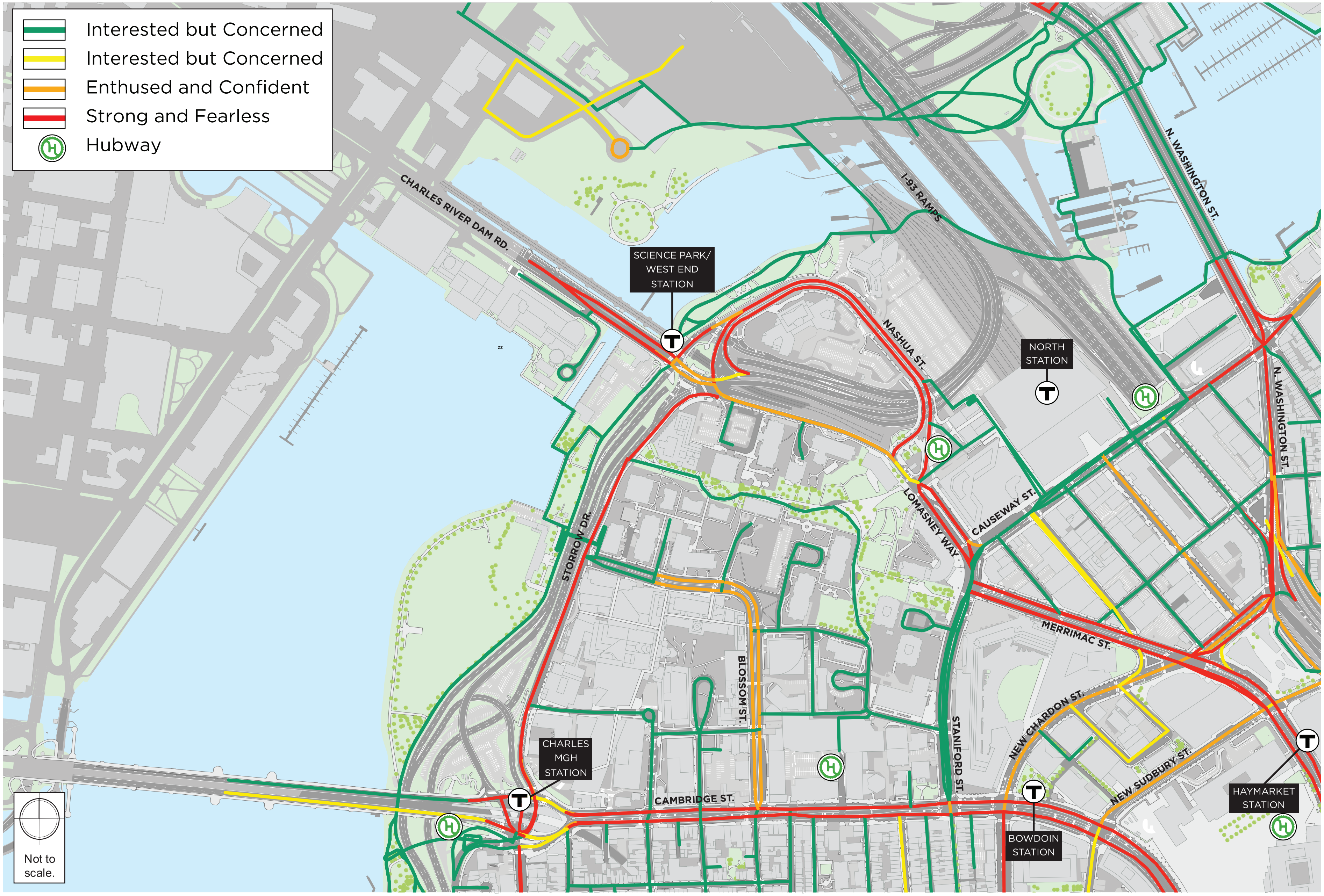


Figure 13. **Future Bicycle Level of Comfort Assuming Committed Bikeway, Bridge, and Path Improvements**

Source: MassGIS. All analysis done by Howard Stein Hudson Staff.

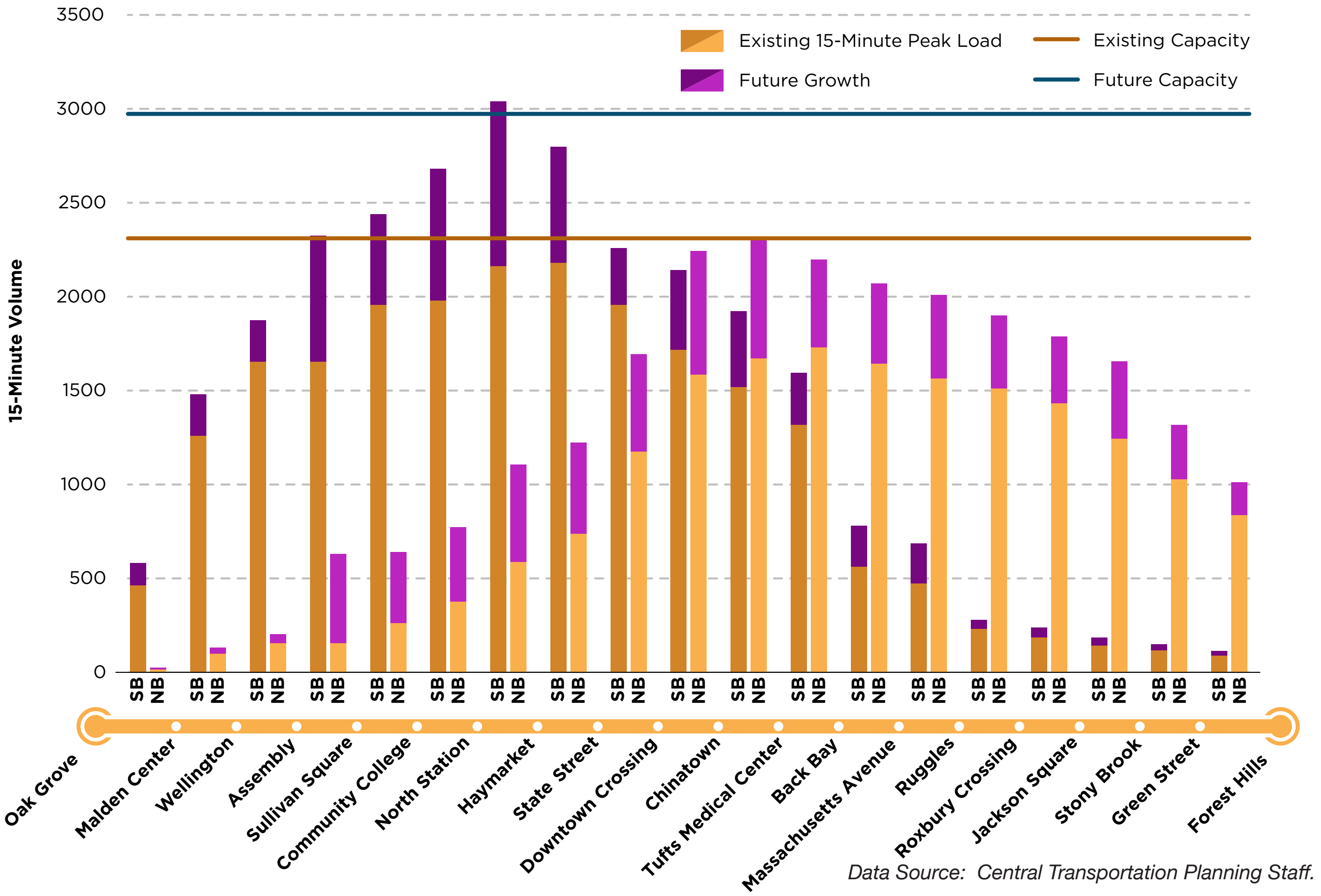


Transit Environment

North Station is one of two major transportation terminals in the City of Boston. Over 67,000 people per day pass through the doors of its commuter rail and subway stations. The commuter rail station is a terminal for five major commuter rail lines which extend as far as 30 miles to the north. The subway station just across Causeway Street (to be connected by tunnel in late 2018 as part of the Hub on Causeway project) brings in the MBTA's Orange and Green Lines, which extend five miles north and south and 10 miles to the west. The MBTA is also designing an extension of the Green Line four miles northward through Somerville to Medford, improving connectivity to North Station, but also making the now sleepy Science Park Station a busy entry point for City and MGH-bound workers. In addition to North Station and Science Park, MBTA subway stations in the North Station Area include Bowdoin on the Blue Line, Charles/MGH on the Red Line, and Haymarket on the Orange and Green Lines (see **Figure 15**).

Due to its importance in the North Station Area and neighborhood concerns about capacity issues related to new construction, an analysis of Orange Line capacity was completed using ridership data collected and analyzed by the Central Transportation Planning Staff (CTPS). This CTPS data projected future development in population growth region-wide to estimate core capacity. To manage this growth and as part of their state of good repair efforts, the MBTA has ordered 152 new Orange Line cars and 252 Red Line cars. The first completed cars will begin arriving in 2018, and the order will be complete by 2023. The new cars will allow for

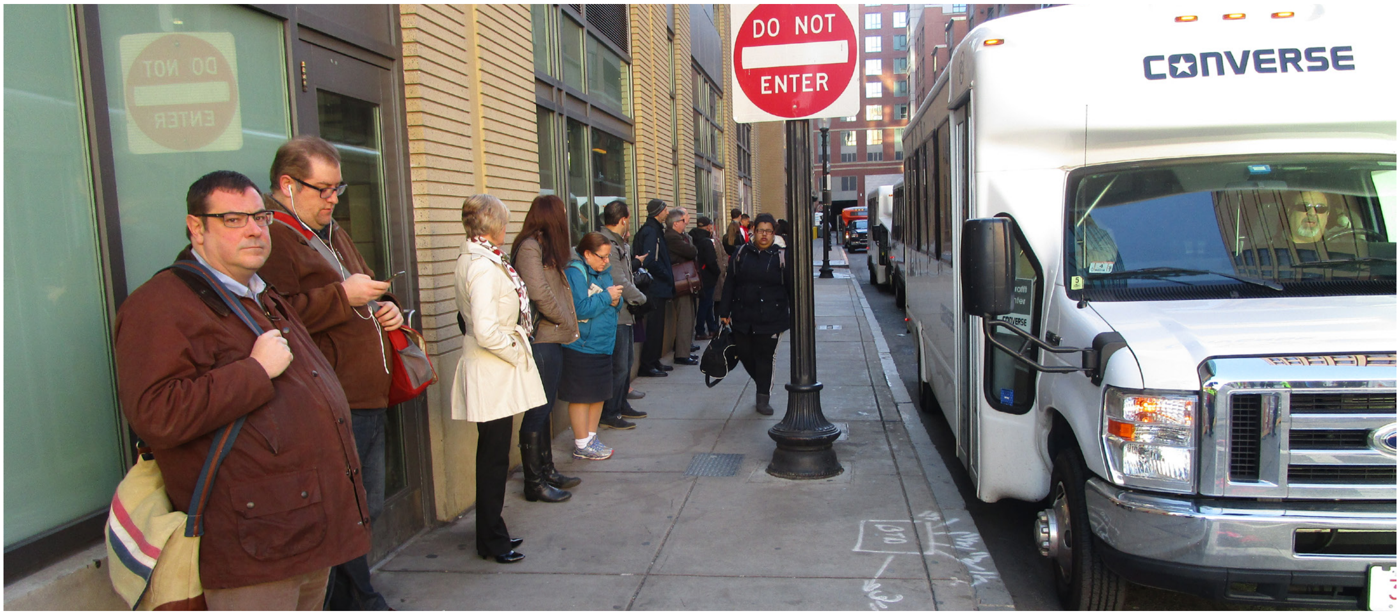
Figure 14. **Orange Line Capacity Improvements Highest 15-minute Load, Weekday Morning**



Data Source: Central Transportation Planning Staff.

a 30-35% increase in capacity (see **Figure 14**), allowing the Orange Line to handle the estimated increase in ridership in the year 2040.

Several bus routes also serve the North Station Area, many of which convene at the Haymarket MBTA Station, where over 23,000 people board them on an average weekday. The busiest bus stop outside of Haymarket Station is at the corner of North Washington and Medford Streets at the edge of the Bulfinch Triangle, where over 12,000 people step off of buses each day, rather than wait in traffic along North Washington Street and alight at Haymarket Station a few blocks away (see **Figure 16**).



The existing shuttle stop on Haverhill Street works well, except when police vehicles are parked along their designated stop, forcing them to board and alight in the middle of the street, blocking through traffic. Image: Howard Stein Hudson.

PRIVATE SHUTTLES

A large number of private shuttles facilitate North Station's connection to Cambridge, the Seaport, and other parts of Boston. Shuttles to Cambridge have been consolidated by the Charles River Transportation Management Association (CRTMA), whereas shuttles to the Seaport have only begun to consolidate under the MCCA's leadership. MGH also runs a large system of shuttles that are not likely to share common routes with other companies since the bulk of their service through the North Station Area meets unique needs, connecting their Charlestown Navy Yard facilities, satellite parking to the north, and other locations.

The jumble of private shuttles that once caused friction at the MBTA Route 4 bus' designated stop on Causeway Street are now contending for space on Haverhill Street, where they compete with pedestrians flowing out of the adjacent subway stop and commercial delivery trucks. At any time during the peak hours, the number of shuttle buses range from zero to three buses. There were never more than three buses observed at one time. There was only one occasion in an hour where three full size buses were present. Most shuttles in use are the smaller, "cutaway" style shuttles.

The full block along the Haverhill Street shuttle stop can typically accommodate this level of shuttle frequency and more, though on event nights this situation is aggravated by police parking for officers on special detail controlling traffic for TD Garden events. When the entire block hosts police parking, shuttles board and alight in the center of Haverhill Street, impeding traffic. At the present time there are no incentives for shuttle operators to consolidate, other than to share costs and get out of each other's way. A full list of private shuttle operators can be found in **Appendix A**.

Figure 15. Regional Connections to the North Station Area

Source: MassGIS.

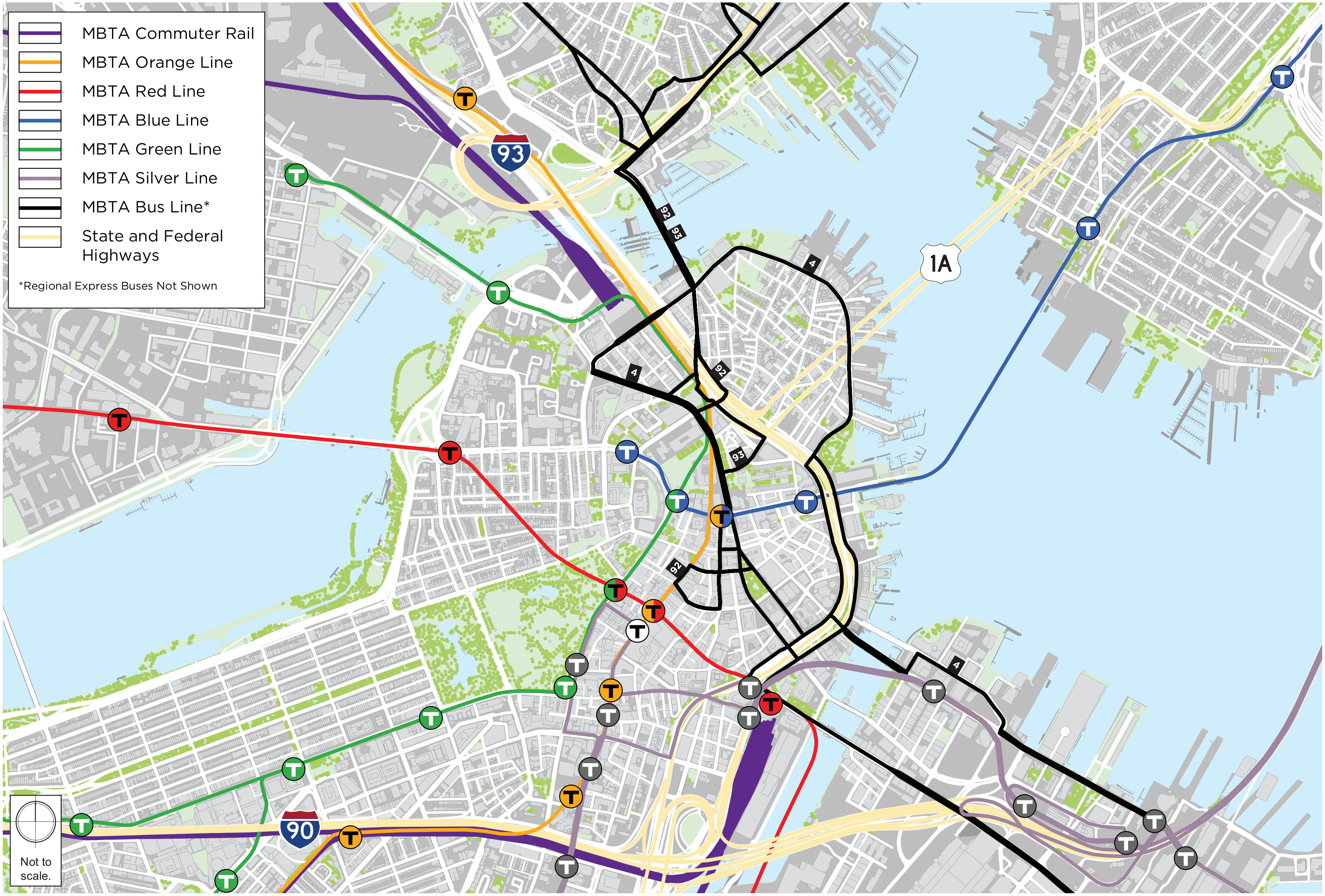
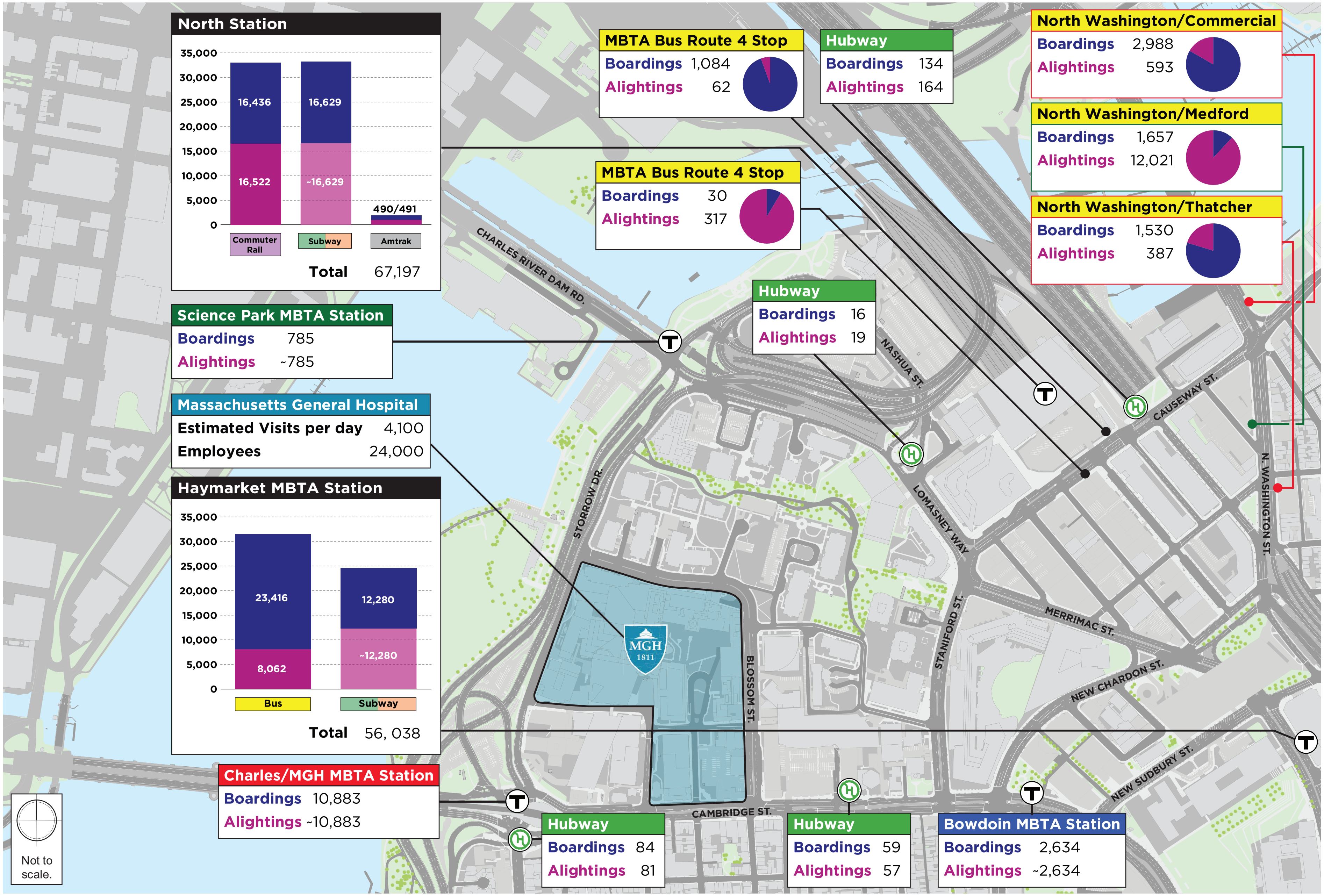


Figure 16. Transit Boardings and Alightings in the North Station Area

Source: *MassGIS; MBTA APC Bus Data.*



Shared Mobility

North Station's Hubway station is the busiest in the Hubway network. Image: Howard Stein Hudson.

The sharing of cars, bikes, and other modes of travel has grown exponentially in the last 10 years, and promises to continue to expand with technological advances such as autonomous vehicles (AVs) and station-less bike sharing. Zipcar and Hubway both have vehicles in the North Station Area (see **Figure 17**), as do individual members of the Turo car sharing network (a peer-to-peer model that changes daily). Uber, Lyft, Safr, and Fasten operate ride sharing services that serve the area. Facts are still emerging on how these new services will affect the existing transportation network.

Several studies have shown that car sharing service users are more likely to sell a car they own, or were influenced not to buy a car, with some studies estimating that effect at a 9-to 13-car reduction in ownership for every car share vehicle in an urban setting.[2] Another study from the Shared Use Mobility Center also showed that "supersharers," people who use several shared modes such as ride share, car share, and bike share, are less likely to own cars and more likely to use transit.[3] Many cities are reporting declines in transit use,[4] and though there are many factors that could influence this trend, some are contemplating the possibility that more affordable ride sharing services are beginning to draw transit users toward the more convenient door-to-door service offered by ride share services. With the arrival of AVs, the cost of ridesharing will drop significantly, possibly making ridesharing more affordable than car ownership for many, and more convenient for transit users when transit services are poor or unreliable.[5] This conversation is still developing, and the City is paying close attention as new data and studies are released.

The future of shared mobility in the project area is closely tied to the relative costs of various transportation modes, both the time-cost and financial cost. A variety of services may help reduce car ownership by offering mobility at a lower price (which would reduce parking demand), but may also run the risk of increasing vehicle trips and congestion. Recent advancements in all-in-one transportation applications for smart phones provide real-time travel times, and could include congestion information that would allow people to avoid traffic by opting not to drive at peak hours. Services such as Google Maps are also testing parking congestion warnings in several major cities for customers using its navigation services.[6]

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[2] Susan Shaheen, Adam Cohen, and Melissa Chung. 2009. "Carsharing in North America: A Ten-Year Retrospective," Transportation Research Record: Journal of the Transportation Research Board, 2110: 35–44; Elliot Martin, Susan Shaheen, and Jeffrey Lidicker. 2010. "Impact of Carsharing on Household Vehicle Holdings: Results from a North American Shared-Use Vehicle Survey," Transportation Research Record: Journal of the Transportation Research Board, 2143: 150–158; and Shaheen, Susan A., and Adam P. Cohen, 2012. "Carsharing and Personal Vehicle Services: Worldwide Market Developments and Emerging Trends," International Journal of Sustainable Transportation 7.1: 5-34.

[3] Shared Use Mobility Center, 2016. "Shared Mobility and the Transformation of Public Transit," American Public Transit Association.

[4] Http://www.seattletimes.com/seattle-news/transportation/while-transit-use-declines-elsewhere-its-booming-in-seattle/

[5] T. Donna Cehn, Kara M. Kockelman, 2016. "Management of a Shared, Autonomous, Electric Vehicle Fleet: Implications of Pricing Schemes," Transportation Research Record, 2572: 37-47, 2016

An improved bicycle network could increase the use of Hubway for last-mile commuting. Image: Howard Stein Hudson.

National leaders, such as the National Association of City Transportation Officials (NACTO) and the Shared Use Mobility Center, cite many unknowns in relation to the future of shared mobility. However, there is one constant call that was also underlined in the creation of this Action Plan: cities need access to more data to understand these new trends. The project team tracked two potential data sources during the study period—a potential data-sharing agreement between the City of Boston and Uber, and another separate potential data-sharing agreement between MassDOT's Office of Transportation Planning and Lyft. Unfortunately, neither option has yielded any data in time to be used in this Plan.

Carshare parking spots such as the one depicted above will be included in ongoing and future development projects throughout the Plan Area. Image: Zipcar.

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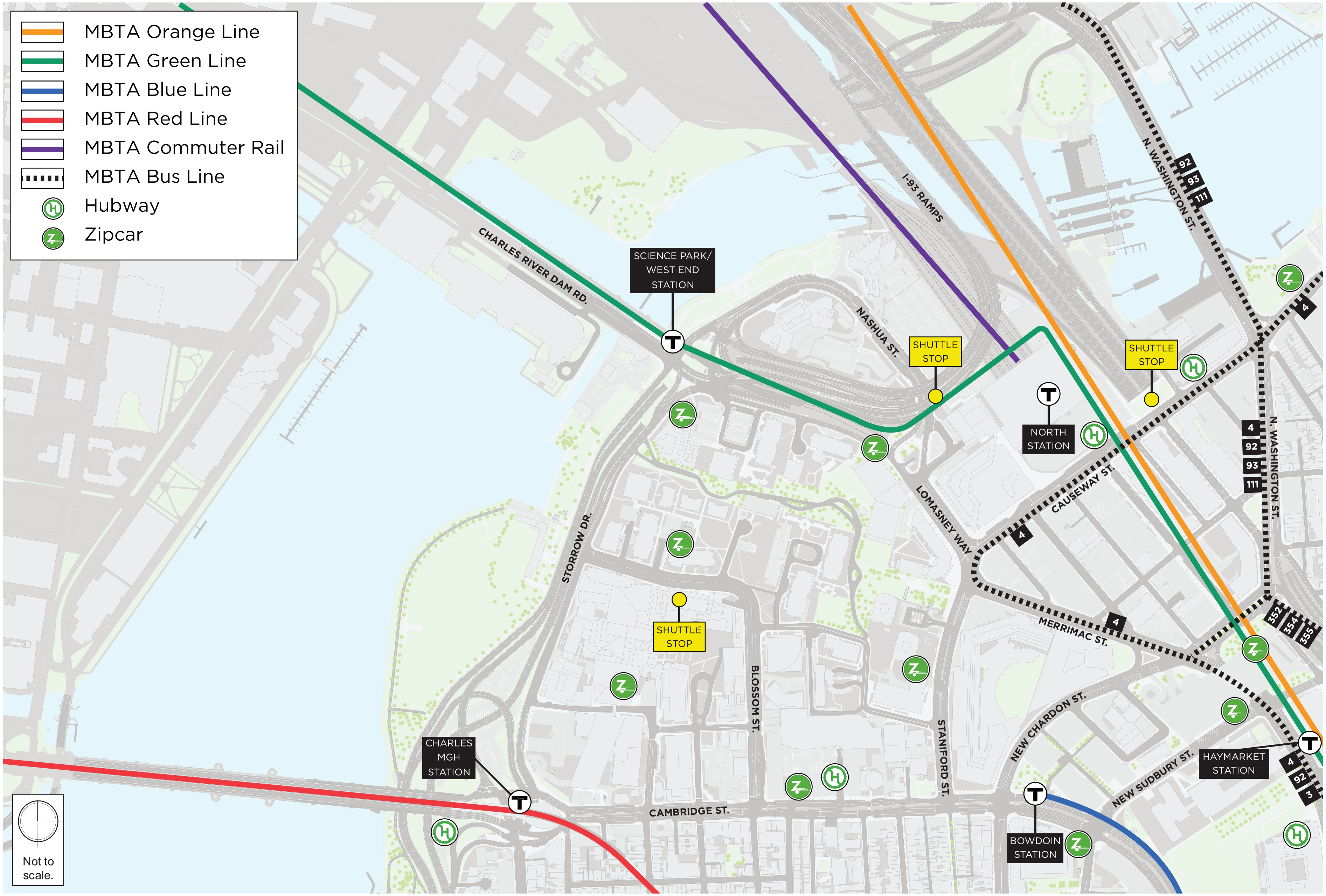
[6] Http://www.nbclosangeles.com/news/local/Androids-Google-Maps-Parking-Feature-Unveiled--412012745.html

Figure 17. **Public Transportation and Vehicle Sharing**

Source: MassGIS.



Motor Vehicles

Residents of the North Station Area would not be surprised to learn that the Boston metropolitan area (which includes parts of New Hampshire and Rhode Island), ranks sixth in the nation in hours of delay per driver according to data collected by INRIX, a real-time traffic data provider. However, if more people were driving, the problem would doubtless be much worse. Among the top 10 most congested cities in the U.S., Boston has the third lowest percentage of people who drive to work, thanks in large part to its transit network. Only New York City and Washington, D.C. have smaller percentages who drive to work. This is beneficial for the North Station Area, which is a transit hub in the downtown core — where so many people are destined.

Over the past three decades, the North Station Area has seen some traffic benefits from the Central Artery/Tunnel Project (also known as the Big Dig), which removed the Central Artery on and off ramps that connected to Causeway Street. However, daily congestion still plagues the areas near the ramps at Sudbury Street, New Chardon Street, and Leverett Circle, particularly in the p.m. peak hours when large numbers of workers in the Downtown area are headed out of the City at the same time. Each of the traffic signals at the ramp entrances balance traffic coming from several city streets, and only so many cars can enter the highways at once. Traffic queues to the highway are long every day, lining up Charles, New Chardon, Sudbury, North Washington, and Nashua Streets. It is a problem common to nearly every downtown highway on-ramp in the nation.

In addition to the routine weekday congestion, the North Station Area experiences huge influxes of traffic at irregular times every week due to events at the TD Garden; the home of the Celtics and the Bruins as well as the venue for several music concerts, and other big events. Parking that is among Downtown's most affordable on non-event days goes at a premium on event nights, police officers park along streets in the Bulfinch Triangle, and some street directions are changed to help perform a traffic ballet as people leave events and get onto the highways. Though there is congestion during events, the system is efficient given the heavy volumes of traffic exiting local garages. The area clears within an hour or two after most events; however, some local residents trying to get to Beverly Street and Lovejoy Place have been forced to wait that hour or two out before being allowed to access their homes after an event.

Further contributing to congestion in the neighborhood is the ongoing construction of the Longfellow Bridge and

Access to highway ramps, such as this approach on North Washington Street, cause congestion on roadways in the North Station Area. Image: Howard Stein Hudson.

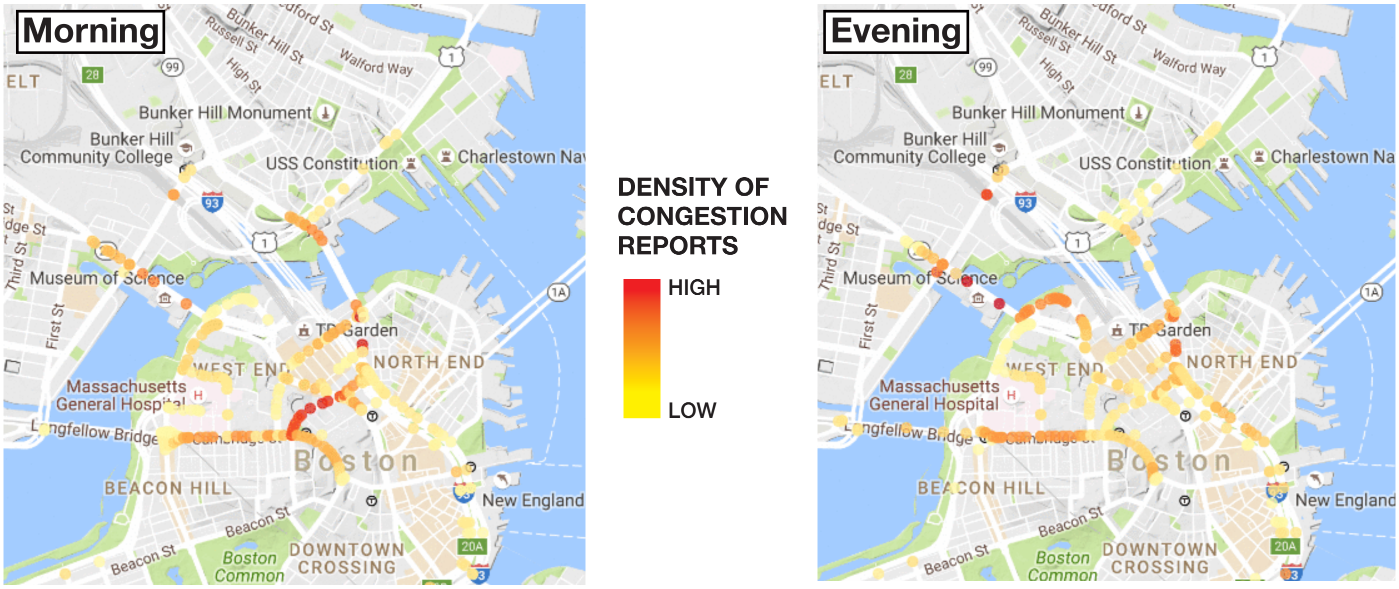
the Connect Historic Boston project. The latter includes a reconstruction of Causeway and Staniford Streets. Once the Connect Historic Boston project is completed, left-hand turns to and from Causeway Street in the Bulfinch Triangle will be limited, leaving only Haverhill and Portland Streets as outlets that allow both right and left turns. Business owners have noted that accessing their businesses has become more difficult, and several people have been seen illegally driving over curbs to access Lancaster Street and other destinations.

Despite ongoing congestion problems, traffic signal operations, for the most part, have been optimized as much as is possible, or will be as part of traffic mitigation projects for several new developments. Some signals, such as Lowell Square, are made inefficient by their configuration—dictated by building locations over a hundred years old before today's traffic was even imagined.

The NSAMAP project team analyzed signal performance and compared it to congestion data that was shared with the City of Boston by WAZE and analyzed by the City's Department of Innovation and Technology. The WAZE data showed that congestion in the neighborhood in the peak hours is primarily focused around the I-93 on-and off-ramps and to the entrances to bridges across the Charles River. The traffic at these locations often spills back through adjacent traffic signals that Level of Service (LOS) analysis (see **Figures 18** and **19**) shows to be efficient, however their efficiency becomes a moot point in light of problems further upstream. In other words, while traffic signals may be optimized with a high LOS, at peak hours they, and the streets they govern, are overwhelmed.

Away from these congested areas, there are a few streets that have extra capacity or are wider than they need to be to handle the traffic they currently carry. They include Merrimac Street, Blossom Street, and part of Nashua Street. A road diet on these streets could benefit other uses, such as bicycle facilities or widened sidewalks (see **Figure 20**). A road diet is a technique in transportation planning whereby the number of travel lanes and/or the effective width of a road is reduced in order provide other benefits. When implemented, these benefits have sometimes included traffic calming, crash reduction, sidewalk widening, provision of bike lanes, and more.

Overall, traffic in the project area can be congested. However, there are several challenges to increasing capacity to handle more traffic. Making an effort to reduce traffic, instead of increase capacity for more traffic, may be a more effective approach.



WAZE data shows traffic delays in the a.m. and p.m. peak hours are highest around approaches to expressway on-ramps. Source: City of Boston Department of Information Technology and WAZE.

Figure 18. Level of Service (LOS) Intersection Analysis

Source: MassGIS; LOS is from Synchro analysis and traffic counts were collected for different projects in the area, mainly Connect Historic Boston, Garden Garage, and Government Center Garage.

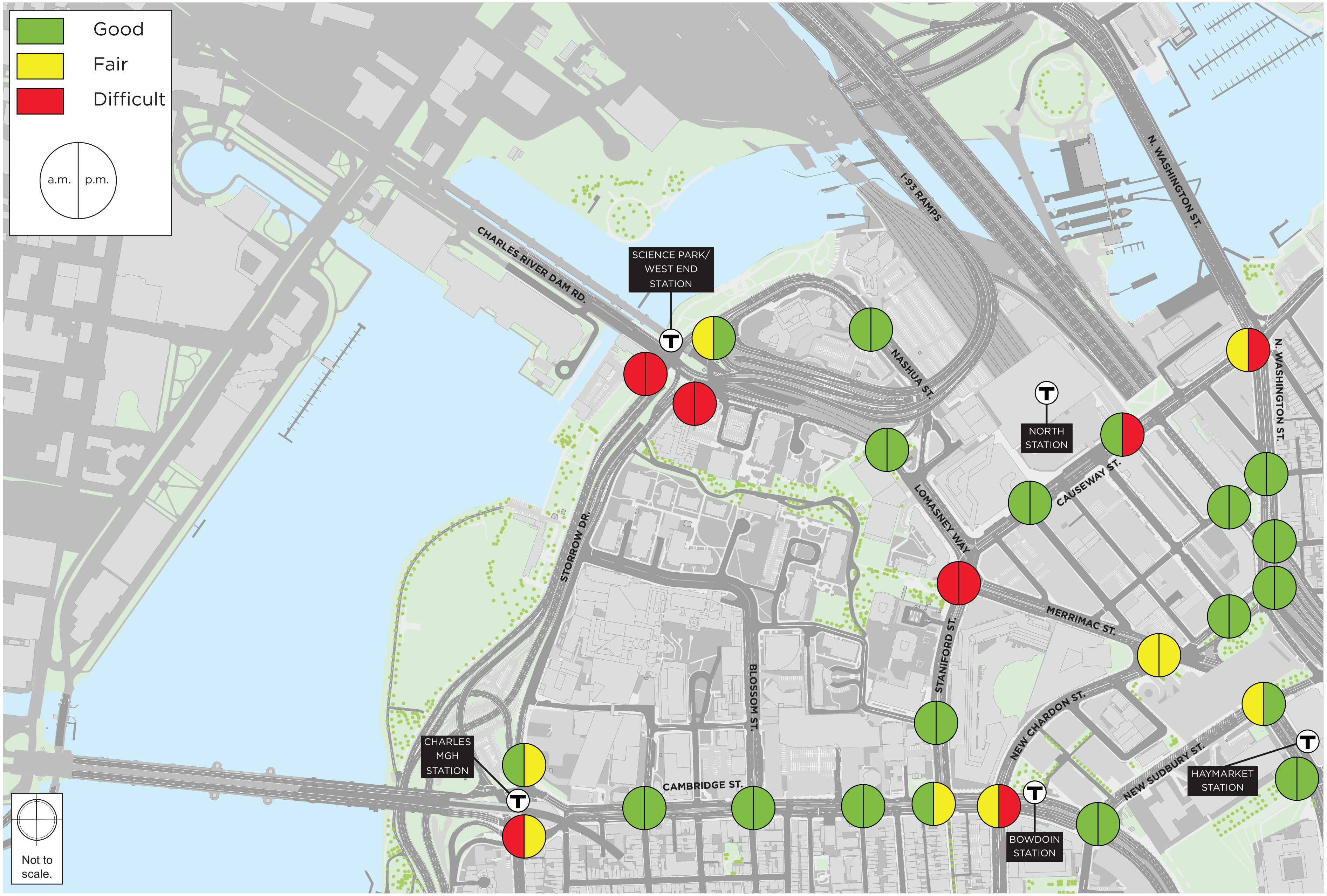


Figure 19. **Future Level of Service Intersection Analysis Assuming Committed Signal Improvements**

Source: MassGIS; Synchro analysis; traffic counts.

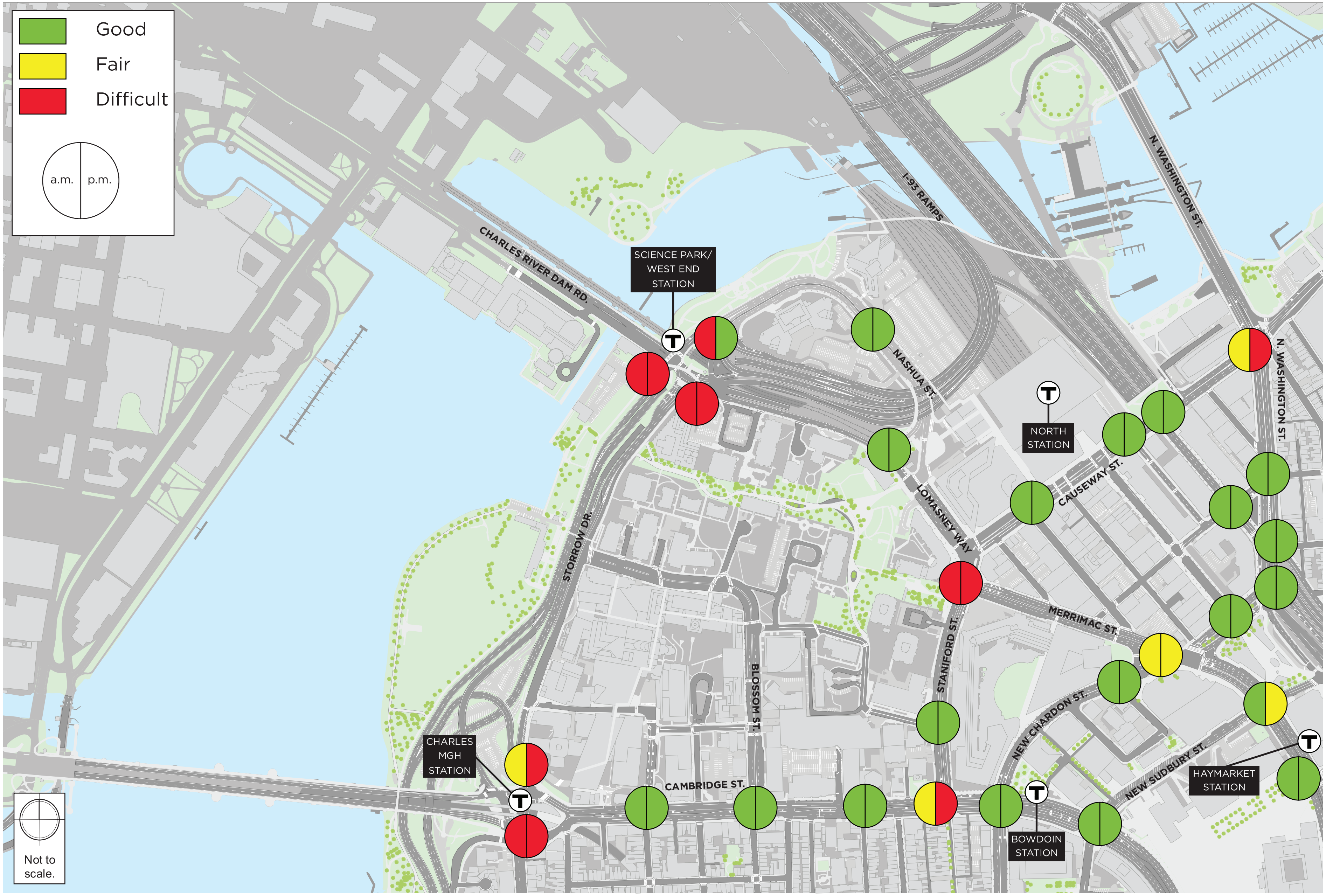


Figure 20. Road Diet Feasibility

Source: MassGIS; Manual Turning Movement Counts; Vehicle Classification Counts.

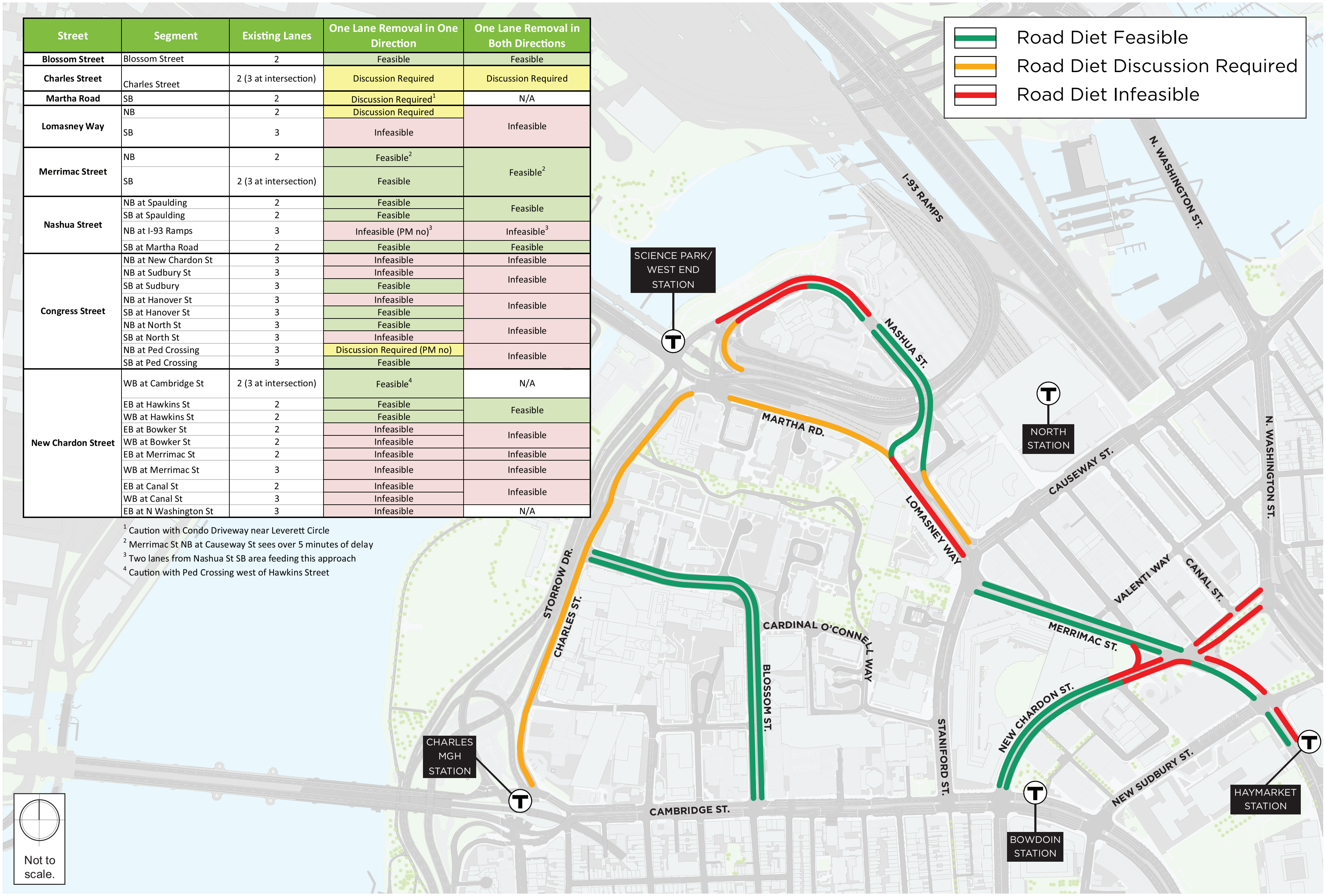
Street	Segment	Existing Lanes	One Lane Removal in One Direction	One Lane Removal in Both Directions
Blossom Street	Blossom Street	2	Feasible	Feasible
Charles Street	Charles Street	2 (3 at intersection)	Discussion Required	Discussion Required
Martha Road	SB	2	Discussion Required[1]	N/A
Lomasney Way	NB	2	Discussion Required	Infeasible
	SB	3	Infeasible	
Merrimac Street	NB	2	Feasible[2]	Feasible[2]
	SB	2 (3 at intersection)	Feasible	
Nashua Street	NB at Spaulding	2	Feasible	Feasible
	SB at Spaulding	2	Feasible	
	NB at I-93 Ramps	3	Infeasible (PM no)[3]	Infeasible[3]
	SB at Martha Road	2	Feasible	Feasible
Congress Street	NB at New Chardon St	3	Infeasible	Infeasible
	NB at Sudbury St	3	Infeasible	Infeasible
	SB at Sudbury	3	Feasible	
	NB at Hanover St	3	Infeasible	Infeasible
	SB at Hanover St	3	Feasible	
	NB at North St	3	Feasible	Infeasible
	SB at North St	3	Infeasible	
	NB at Ped Crossing	3	Discussion Required (PM no)	Infeasible
	SB at Ped Crossing	3	Feasible	
New Chardon Street	WB at Cambridge St	2 (3 at intersection)	Feasible[4]	N/A
	EB at Hawkins St	2	Feasible	Feasible
	WB at Hawkins St	2	Feasible	
	EB at Bowker St	2	Infeasible	Infeasible
	WB at Bowker St	2	Infeasible	
	EB at Merrimac St	2	Infeasible	Infeasible
	WB at Merrimac St	3	Infeasible	Infeasible
	EB at Canal St	2	Infeasible	Infeasible
	WB at Canal St	3	Infeasible	
	EB at N Washington St	3	Infeasible	N/A

[1] Caution with Condo Driveway near Leverett Circle

[2] Merrimac St NB at Causeway St sees over 5 minutes of delay

[3] Two lanes from Nashua St SB area feeding this approach

[4] Caution with Ped Crossing west of Hawkins Street



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3. Defining the Problems and Setting the Shared Goals

The Action Plan's community engagement process gave residents, business owners, commuters, and others an opportunity to be heard and have their thoughts incorporated in a meaningful way. A variety of engagement tools were used to gather the problems, concerns, and visions from the people in the neighborhood including: public meetings, outdoor and public-space pop-up sessions, and an online WikiMap. This feedback was used to define a set of shared goals that a majority could agree upon.

OVERVIEW OF NSAMAP PUBLIC MEETINGS

Community engagement for the North Station Area Mobility Action Plan was structured around seven public meetings, where people had the opportunity to engage with the entire project team. The first three meetings were primarily focused on defining the problems and agreeing on a set of shared goals, while following meetings sought to narrow goals into an Action Plan, and to build support for that plan.

Image: Howard Stein Hudson.

- **Tuesday, June 28, 2016, 6:30 p.m.**
  Existing Conditions and Defining Problems (Section 3)
- **Wednesday, September 7, 2016, 6:30 p.m.**
  Establish Shared Goals (Section 3)
- **Tuesday, September 20, 2016, 6:30 p.m.**
  Highlighting Existing Projects and Finalizing List of Community-Suggested Action Items (Section 4)
- **Tuesday, November 15, 2016, 6:30 p.m.**
  Prioritizing Action Items (Section 5)
- **Wednesday, January 18, 2017, 6:30 p.m.**
  Draft Concept for Action Plan (Section 6)
- **Tuesday, March 21, 2017, 12:00 & 6:00 p.m.**
  Design Charrettes for Bulfinch Triangle Action Items (Section 7)
- **Monday, June 19, 2017, 6:30 p.m.**
  Draft Action Plan Report and Short-Term Action Item Designs (Section 8)

Defining the Problems

The first step in solving any existing set of problems is defining them. At this stage in the process, gathering as much information as possible helps to ensure that no stone is unturned in building a comprehensive set of potential action items to choose from. The community defined the problems in the North Station Area through a public meeting with a focus on highlighting challenges, pop-up meetings on the streets in the neighborhood, and publishing an interactive online WikiMap where people could pin their comments to geographic locations in the neighborhood. The project team also reviewed existing planning resources.

PUBLIC MEETING #1

The first public meeting on June 28, 2016 gave people the opportunity to comment directly on maps of the area and view analyses of existing conditions provided by the project team. Their comments were recorded, and helped form the basis of the Action Plan. Attendees expressed the desire to know more about development projects already in the pipeline, and stressed the need for implementation funding in order to validate the process. Several comments were made about the need for enforcement of existing regulations, particularly double parking in specific locations. There were concerns about traffic congestion, speeding, pedestrian safety, wayfinding, and accessibility, as well as existing and future development projects.

Image: Howard Stein Hudson.

POP-UPS

Over the summer, pop-up sessions helped the project team reach people on the streets and at North Station. Members of the consultant team partnered with City officials to engage people at six locations chosen to capture transit users, pedestrians, drivers coming out of parking garages, and shuttle riders. Their feedback was collected on detailed maps of the project area. Over a dozen of these maps were covered in comments by the end of the series of pop-ups.

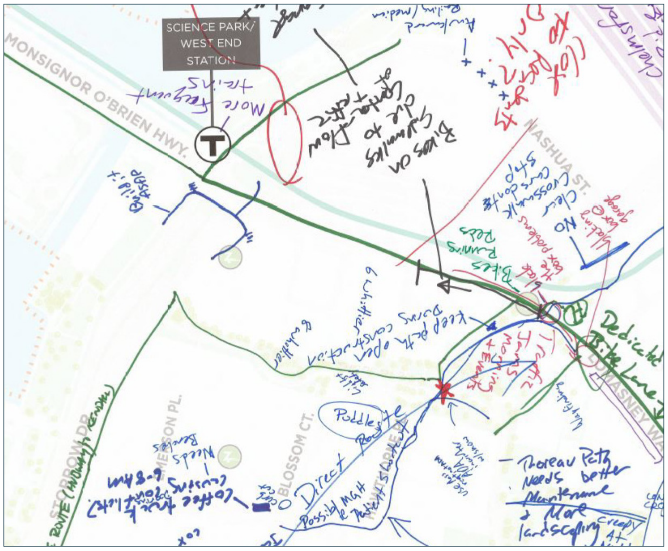
Consultants and City officials partnered to capture the ideas of people walking through the neighborhood at high activity times: morning and evening commute, as well as lunchtime. Image: Howard Stein Hudson.

Pop-ups allowed the opportunity to engage people in the process who might not attend a traditional evening meeting. Image: Howard Stein Hudson.

Highlights included ideas to add placemaking elements, particularly around the Haymarket MBTA Station, the lack of sufficient pedestrian crossing time in traffic signal cycles, and wayfinding between destinations. Several individuals pointed to specific problems, such as double parking on Staniford Street, and significant pickup/drop off volumes along Cambridge Street near the Whole Foods Market. Another key theme was separating bicycles from vehicles and pedestrians. Bicyclists at pop-ups emphasized the lack of safe connections to the Charles River and Downtown.

POP-UP LOCATIONS:

- **Wednesday, August 3, 2016, 4 to 6 p.m.**
  Thoreau Path
- **Thursday, August 4, 2016, 11 a.m. to 1 p.m.**
  Cambridge Street at the Charles River Plaza
- **Thursday, August 4, 2016, 4 to 6 p.m.**
  Government Center Garage/Haymarket MBTA Station
- **Friday, August 5, 2016, 8 to 10 a.m.**
  Canal Street at Valenti Way
- **Thursday, August 11, 2016, 4 to 6 p.m.**
  North Station
- **Wednesday, October 12, 2016, 7 to 9 a.m.**
  Yawkey Building, MGH

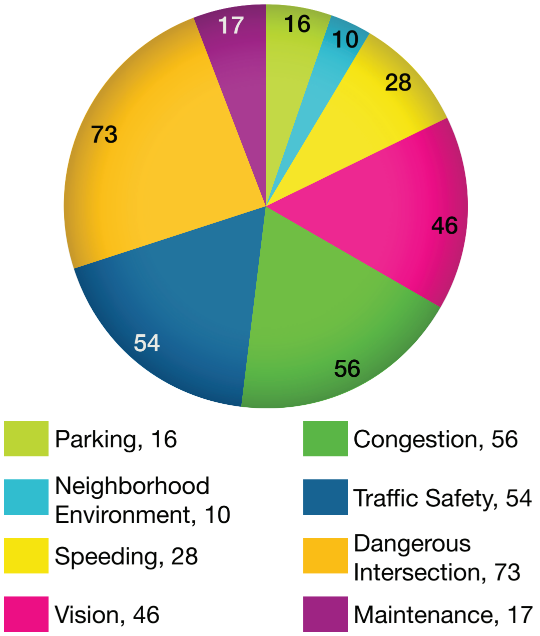


Each mode was assigned a different color, though some themes were common across modes, such as the need for improved wayfinding within the neighborhood. Image: Howard Stein Hudson.

WIKIMAP

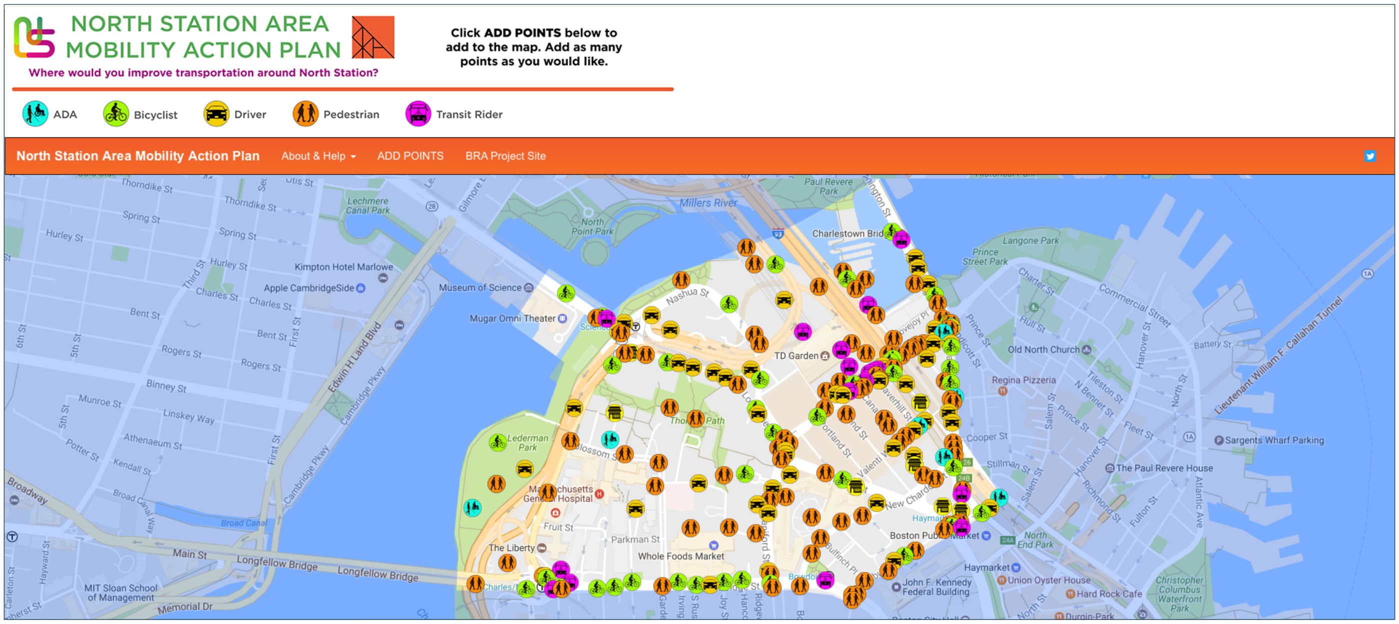
In addition to public meetings and pop-ups, an online WikiMap (http://wikimapping.com/wikimap/nsmap.html) was made available over the course of the project to gather feedback from people who may not have had time to attend a public meeting, including newer residents, employees, or those with families. The WikiMap went live in June 2016, and remained open to public comment until March 2017. Users could choose between modes (bicycling, driving, pedestrian, transit, or ADA), and drop a pin and notes on the map where the problem (or idea) was located. Subsequently, users could comment or vote in support or opposition to a comment. Areas of agreement and comment clusters emerged from this digital dialogue. Although almost half of the participants were West End residents, a significant number were from Metro North towns (perhaps employees who commute through the North Station Area). In total, 204 people dropped pins on the WikiMap, with 212 unique comments created, not including individuals who "liked" other comments.

Many of the WikiMap comments focused on pedestrian and motor vehicle concerns, particularly at key intersections in the neighborhood. The most common concerns included traffic safety, congestion, and dangerous intersections. People also noted speeding problems, double-parking issues, and roadway maintenance issues. Charles Circle received several comments relating to the difficulty of accessing the sidewalks from the rear entrance of the Charles/MGH MBTA Station. At intersections across the neighborhood, pedestrians requested longer crossing times and shorter waits at signals, as well as new crosswalks. Bicycle comments concentrated on access between the Charles River and Downtown. Other concerns related to the need for bus and emergency vehicle priority, as well as the need for organizing shuttles and tour buses-



People who commented covered a variety of topics on the WikiMap, with safety in traffic and intersections a top concern. Source: Howard Stein Hudson.

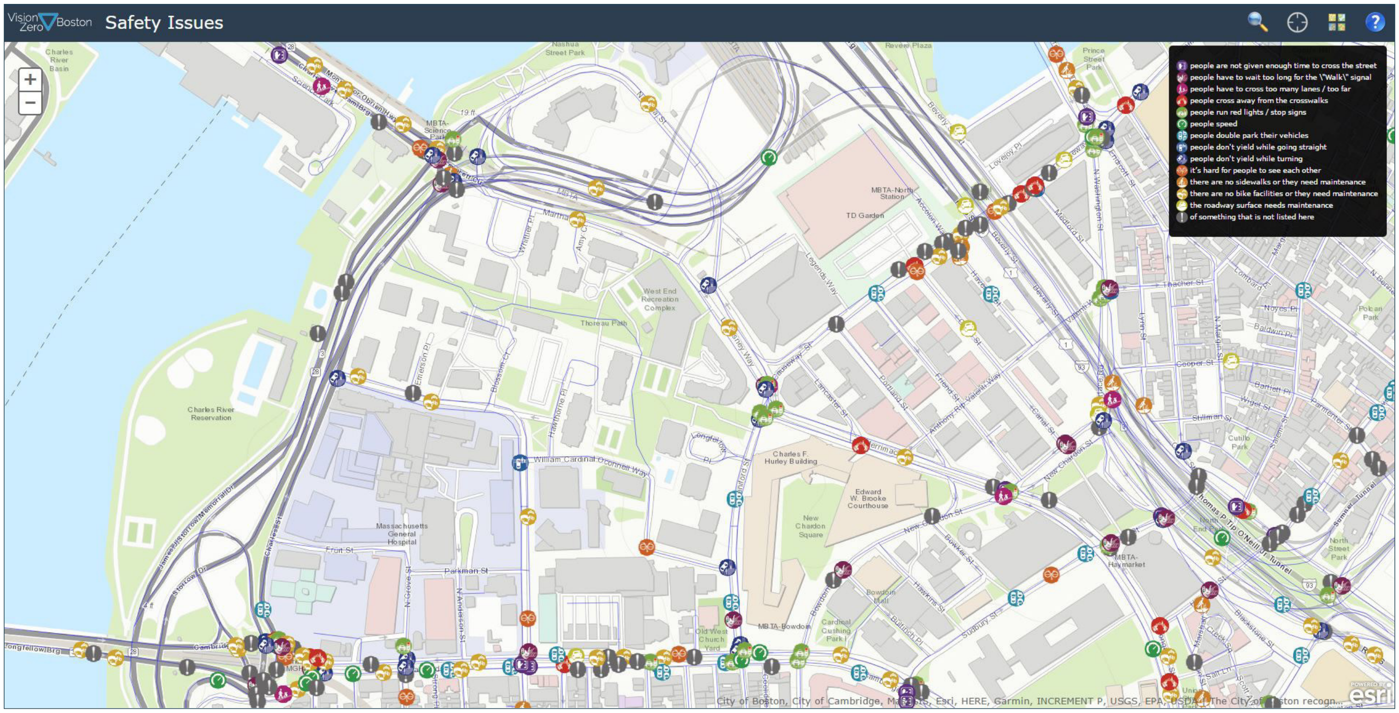
> IT IS POSSIBLE TO CONNECT TO THE BLOSSOM STREET FOOTBRIDGE TO NORTH STATION VIA THE BACK STREETS AND PATHS OF THE WEST END, BUT THEY ARE NOT WELL SIGNED. CREATING A DEFINED PATH FOR BIKES AND PEDESTRIANS THROUGH THIS NEIGHBORHOOD WOULD KEEP PEDESTRIANS AND CYCLISTS AWAY FROM BUSY ROADS WHILE PROVIDING A STRAIGHT - AND USEFUL - PATH BETWEEN THE NORTH STATION AREA AND THE ESPLANADE, AND AVOIDING THE MASSIVE LEVERETT CIRCLE INTERSECTION.
>
> WIKIMAP COMMENT


NORTH STATION AREA
MOBILITY ACTION PLAN
Where would you improve transportation around North Station?
Click ADD POINTS below to add to the map. Add as many points as you would like.
ADA
Bicyclist
Driver
Pedestrian
Transit Rider
North Station Area Mobility Action Plan
About & Help
ADD POINTS
BRA Project Site
TD Garden
Massachusetts General Hospital
Longfellow Bridge
Boston Public Market
Haymarket

Over 200 individual comments were captured in the WikiMap. Image: Howard Stein Hudson.

OTHER PLANNING RESOURCES

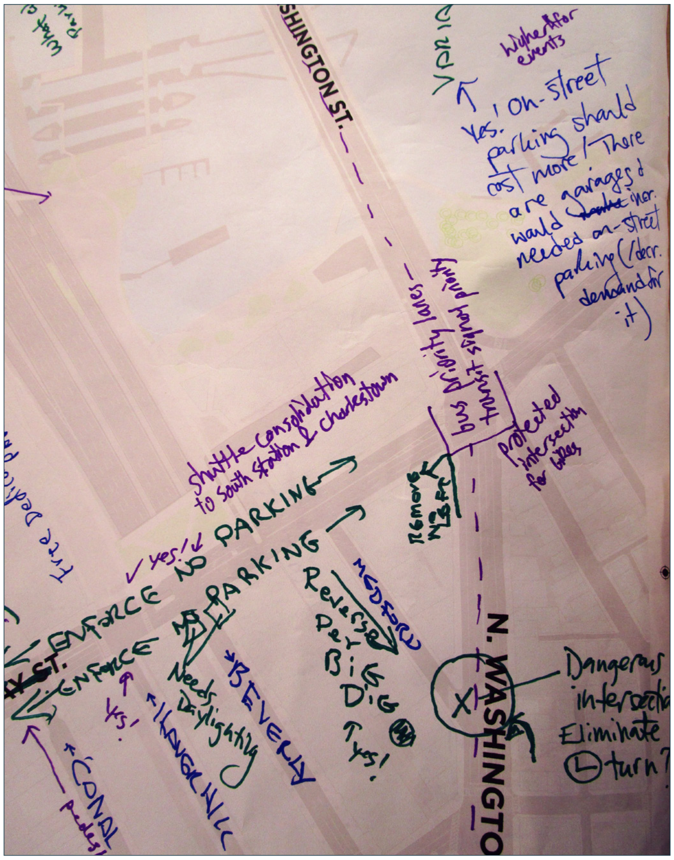
In addition to keeping up with ongoing City and state planning projects such as Go Boston 2030, Imagine Boston 2030, and the MBTA's Focus 40, the project team reviewed the Vision Zero Boston Safety Concerns Map, an online resource operated by the City of Boston where residents have identified locations of concern regarding transportation safety. Since this map was created via a standing request for submission of safety issues city-wide, it provides perspective of yet another group of users who may not be engaged in the NSAMAP public meeting process.


Vision Zero Boston
Safety Issues
people are not given enough time to cross the street
people have to wait too long for the \"Walk\" signal
people have to cross too many lanes / too far
people cross away from the crosswalks
people run red lights / stop signs
people speed
people double park their vehicles
people don't yield while going straight
people don't yield while turning
it's hard for people to see each other
there are no sidewalks or they need maintenance
there are no bike facilities or they need maintenance
the roadway surface needs maintenance
of something that is not listed here
TD Garden
MBTA-North Station
Massachusetts General Hospital
Charles River Reservation
MBTA-Haymarket
MBTA-Bowdoin
City of Boston, City of Cambridge, MassGIS, Esri, HERE, Garmin, INCREMENT P, USGS, EPA, USDA, The City of Boston recogn...
esri

Comments that were also identified in the Vision Zero Boston Safety Concerns Map included improving access to and from the Charles/MGH MBTA Station. Image: City of Boston.

Establishing Shared Goals

Based on hundreds of community comments gathered in the first public meeting, pop-ups, WikiMap, and other planning resources, the project team noted that all problems identified could fall under one or more of four simple shared goals. The second public meeting was used to test community support for these goals, which were then used later in the process to clarify the impact of potential Action Items, and show how they relate to what was heard from the community in the first stage of the process.



SHINGTON ST.
Wyher Afor events
Yes! On-street parking should cost more / There are garages & would incr. needed on-street parking (/decr. demand for it)
bus priority lanes – transit signal priority
protected intersection for bikes
shuttle consolidation to South Station & Charlestown
Remove NB RT
✓ yes! ✓ NO PARKING
ENFORCE
ENFORCE NO PARKING
Needs Daylighting
Reverse Per Big Dig
yes!
MEDFORD
BEVERLY
yes!
CONAL
N. WASHINGTO
Dangerous intersecti
Eliminate Ⓛ turn?

Attendees provided many ideas for ways to improve the neighborhood. Image: Howard Stein Hudson.

The themes of all commentary, across the various methods of public input, fell into four categories. These shared goals below have been used to guide the Action Plan's development

SHARED GOALS

SAFETY
The Action Plan should improve safety.

MORE UNDERSTANDABLE
The Action Plan should prioritize options that help make the neighborhood more understandable.

MORE CHOICES
The Action Plan should increase mode choices.

LESS CONGESTION
The Action Plan should help create easier local access to neighborhood destinations and lower traffic congestion where possible.

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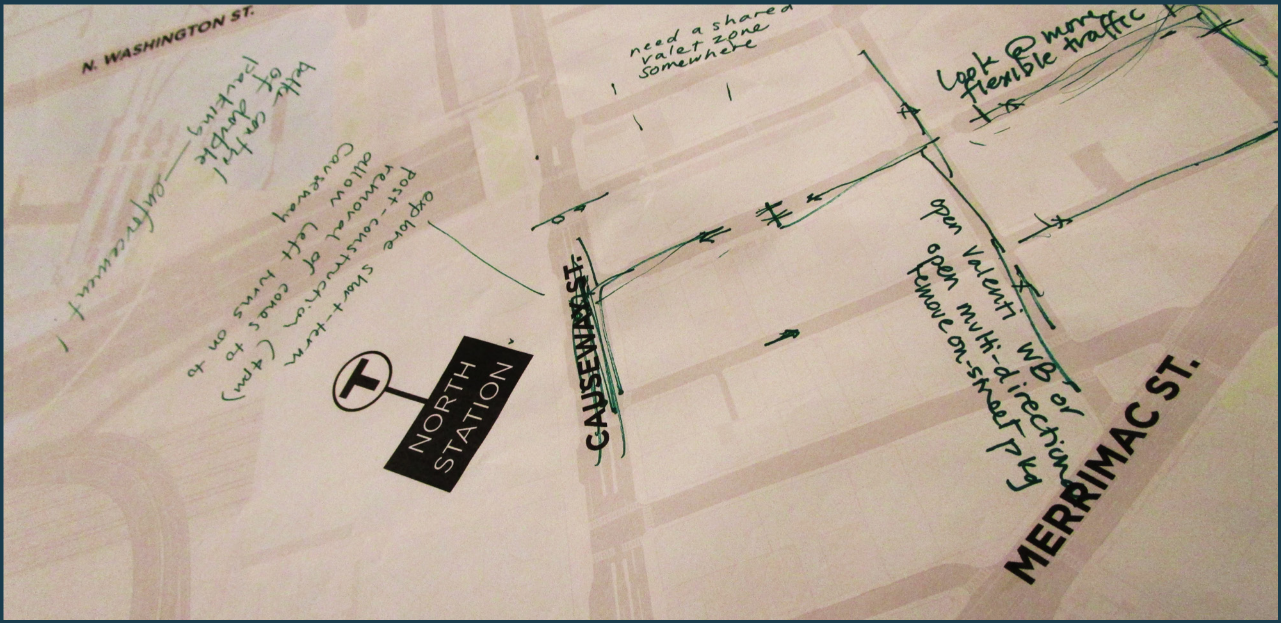
PUBLIC MEETING #2

The second public meeting on September 7, 2016 established the shared goals of Safety, More Choices, More Understandable, and Less Congestion with the community. After discussing the goals, the project team began sharing details on existing projects and their potential benefits for the neighborhood. At the end of the meeting, the team encouraged more input and asked the community to give their own Action Item ideas on maps of the project area. The final half hour of the meeting was devoted to the latter activity, and the ideas collected added to a growing list of community-suggested action items.

> PEOPLE WALKING HAVE SIDEWALKS BECAUSE IT ELIMINATES CONFLICT. SIMILARLY, BIKERS SHOULD HAVE PROTECTED BIKE LANES ON MOST STREETS TO ALSO ELIMINATE CONFLICTS.

Image: Howard Stein Hudson.



In this breakout group, participants considered more efficient ways to move vehicles through the Bulfinch Triangle. Image: Howard Stein Hudson.

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4. Creating the Action Items

To create a concise and legible set of Action Items for the community to discuss, the project team narrowed down a list of over 188 distinct ideas from the community, the City, and the project team. After removing projects that were already underway from the list, not technically feasible, or far outside of the City's jurisdiction, the project team worked to combine remaining items into groups that would improve their chance of success, and added some emerging best practices based on recent successful efforts in other cities. Cost, duration, and potential impacts were then established for the resulting 41 projects.

PUBLIC MEETING #3

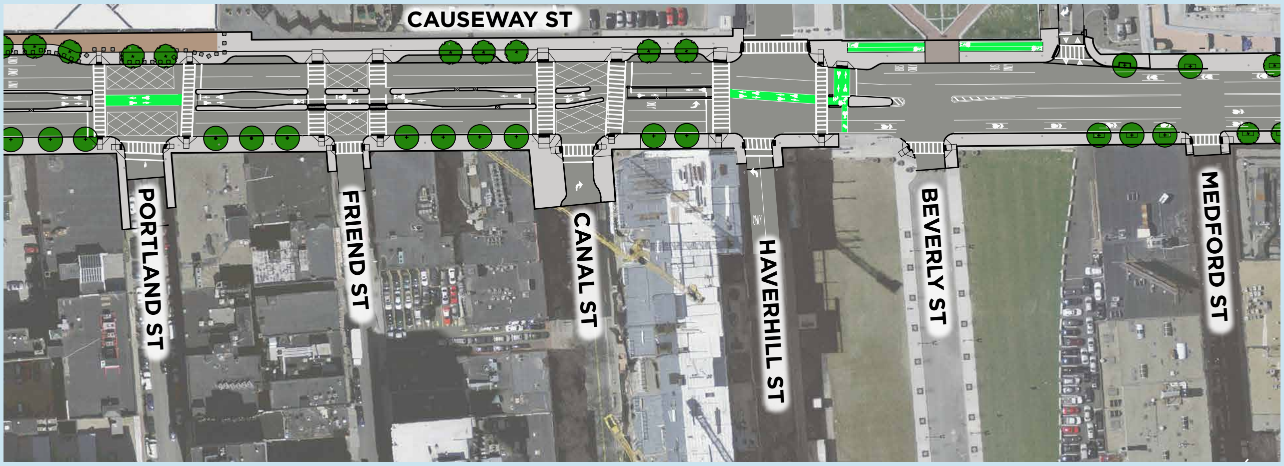
At the third public meeting on September 20, 2016, the project team went deeper into future public infrastructure and development project commitments. The team illustrated how those changes related to each other, and introduced a full list of the 159 community-suggested action items gathered so far. The community was then asked for any additional ideas to add to the list. People commented on parking enforcement, including commercial delivery; taxis and limos in front of TD Garden; the need for resident-only access to Causeway Street during events; enforcing restrictions on police parking; and the need for circulation changes in and around the Bulfinch Triangle. Several email comments were received afterward, and an additional 29 ideas were added to the list to total 188 community-suggested action items.

Pedestrianizing Canal Street was one of many community-suggested action items. Bell Street in Seattle, shown above, has gone through a similar transformation. Image: Downtown Seattle Association.

Of that original 188 community-suggested action items, around 20% were related to 24 projects that are already being addressed by existing infrastructure or development projects in the neighborhood. Those existing projects are included below for reference and to establish a baseline set of improvements to the area.

Existing Projects *

PEDESTRIAN ENVIRONMENT



Connect Historic Boston's design will provide many new pedestrian crossings on Causeway Street. Image: Howard Stein Hudson.

1) Causeway Street Pedestrian Crossings (and Tunnel)

The Connect Historic Boston project, when complete, will add several new at-grade crossings across Causeway Street. The Hub on Causeway development is also scheduled to restore the underground tunnel between North Station and the Orange and Green Line MBTA stations in late 2018.

2) Friend Street Reconstruction

The Public Works Department (PWD) is awaiting the end of construction on Causeway Street to carry out a planned reconstruction of Friend Street to improve access issues, including upgrading sidewalks with significant cross slopes that are hazardous to those with disabilities.

3) Keany Square Pedestrian Improvements

Though Keany Square's footprint is too constrained to provide protected bike lanes, the intersection is being reconstructed with new sidewalks, ramps, signal equipment, bike turn queue boxes, and other improvements. The improvements are part of a coordinated effort between the Connect Historic Boston project and the North Washington Street Bridge Reconstruction project.

4) Leverett Circle Pedestrian Bridge

The neighborhood has been requesting the replacement of the Leverett Circle Pedestrian Bridge, and MassDOT is currently in the early stages of designing the bridge and the intersection around it (including wider crosswalks). The project is nearing 25% design, and the next steps will be allocating funding for completing the design and construction.

* The physical changes to the built environment that these projects will create are shown in **Figure 22**.

5) Pedestrian Bridge Connection Between the Esplanade, Charles Circle, and Longfellow Bridge

A new pedestrian bridge over Storrow Drive is being constructed in conjunction with the Longfellow Bridge reconstruction that will connect to Charles Street, the Esplanade, and the Longfellow Bridge. The old pedestrian bridge will remain in use until the new bridge is complete, currently scheduled for spring of 2018.

6) South Bank Bridge

DCR is currently designing a bridge to connect two sections of the Boston Harborwalk: from Lovejoy Wharf and Beverly Street Park to the Nashua Street Park. In 2016, DCR reached an agreement with MGH to use part of a local parking lot for construction staging, but the project's design is ongoing.

QUALITY OF PLACE

1) Beverly Street Park

An area now used as a parking lot at the end of Beverly Street near Lovejoy Wharf has been planned as a riverfront park by the DCR. The intent is to construct the park in conjunction with the South Bank Bridge.

BICYCLE ENVIRONMENT

1) Bicycle Parking

New bike racks are being installed by MGH near Cambridge Street at Charles Circle, and roughly 50 public bike parking spaces are being added in and around the Hub on Causeway project at North Station. The City of Boston adds bike racks by request on an ongoing basis, and also requires indoor and outdoor bike racks with all new development projects.

2) Bicycle Safety Education

The City's Boston Bikes program operates a Youth Cycling Program, a Women Bike! program, and sponsors several other events each year to promote bicycle safety.

3) Charles River Dam Road Bikeways

A plan for bike lanes on Charles River Dam Road has been delayed while the Longfellow Bridge is under reconstruction. The discussion to reconfigure the road will resume when the Longfellow Bridge is open to traffic.

4) Hubway Station at the Haymarket MBTA Station

The Bulfinch Crossing development has committed to installing a Hubway Station at or near the reconstructed Haymarket Busway.

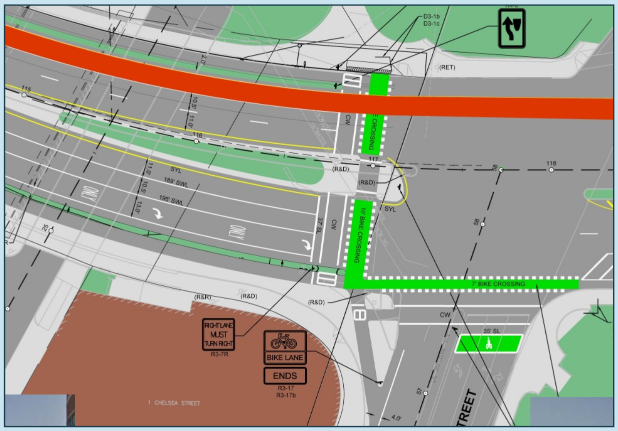
5) Connect Historic Boston

Protected bike lanes are being added to Staniford, Causeway, and Commercial Streets. Though Keany Square's footprint is too constrained to provide protected bike lanes, the intersection is being reconstructed with new sidewalks, ramps, signal equipment, bike turn queue boxes, and other improvements.

When there is an unmet need for bike parking, space on sidewalks may be used instead. Image: Howard Stein Hudson.

6) North Washington Street Bridge Protected Bike Lanes

The City of Boston/MassDOT's reconstruction of the North Washington Street Bridge will include one-way protected bike lanes for most of its span.



A portion of the 75% design plans for the North Washington Street Bridge showing new protected bike lanes. Source: City of Boston.

7) South Bank Bridge

DCR is currently designing a bridge to connect two sections of the Boston Harborwalk: from Lovejoy Wharf and Beverly Street Park to the Nashua Street Park. In 2016, DCR reached an agreement with MGH to use part of a local parking lot for construction staging, but the project's design is ongoing.

TRANSIT ENVIRONMENT

1) Haymarket Station Busway

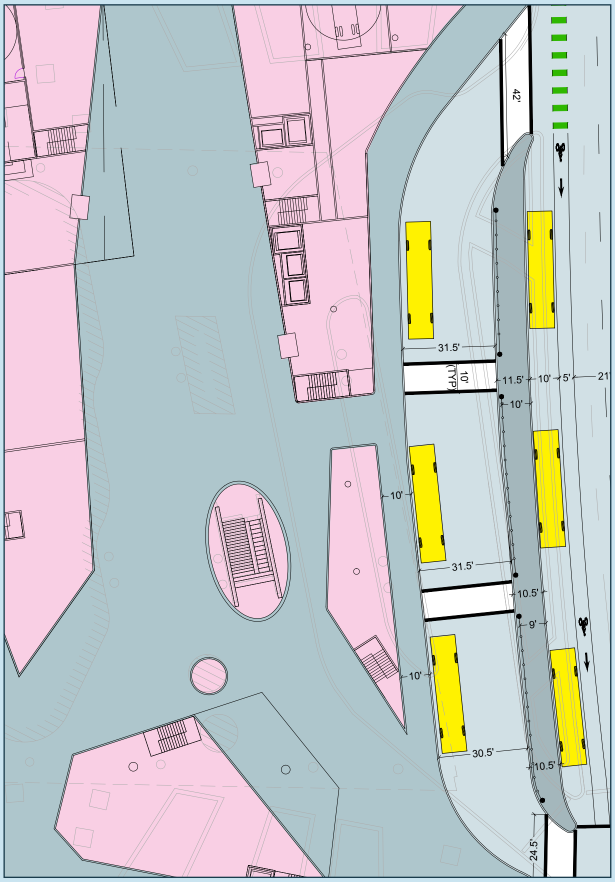
The Bulfinch Crossing development, in its last phase, will reconstruct the busway at Haymarket Station to include six bus bays, an increase from the existing five bus bays.

2) Lovejoy Wharf Ferry

Affordable water transportation is a priority for the City of Boston. The City has been working with many key partners including MassDOT, MCCA, and Massport, to establish ferry service at Lovejoy Wharf. The first priority is for service to the South Boston Waterfront. Currently the City and its partners are working to complete the Lovejoy Wharf dock infrastructure and is working with its partners on an MCCA-led business plan for new ferry service.

3) North-South Rail Link

Though this is not a committed improvement, the concept to link North Station to South Station by rail has been discussed for decades at the highest levels of the Commonwealth's government, and is beyond the scope of this Action Plan. If feasible, it would give commuters at North Station access further into downtown, easier access to some suburbs south of the City, and allow for some suburb-to-suburb connectivity without the need to



As of this report, the design for the new Haymarket Station includes space for 6 buses. Source: Government Square Garage; HYM (2016).

transfer trains downtown. In March 2017, MassDOT issued a Request for Proposals for a study to determine if such a project would be financially viable with the latest tunnel boring technology available. Estimates have put the cost at around $8 billion in the past, but as low as $2 billion with the newest methods available.

4) North Station Expansion

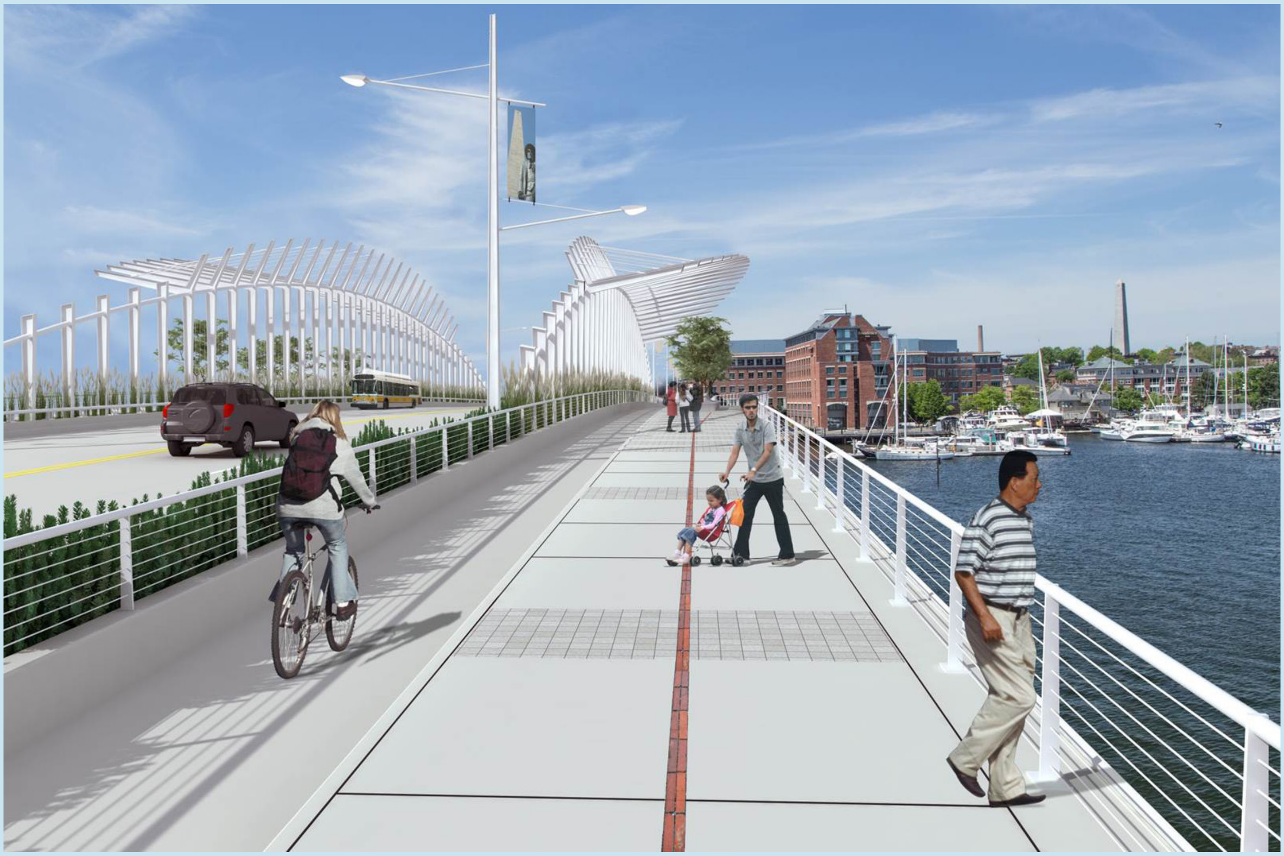
Two existing projects promise improvements to the capacity of the MBTA's North Station. The Hub on Causeway project will improve pedestrian access to the station, and an MBTA project to widen the drawbridge over the Charles River from four tracks to six tracks is currently in design. The drawbridge is intended to include a walking and biking path in addition to the railways.

5) Orange and Green Line Improvements

The MBTA has ordered 152 new Orange Line cars to replace its aging fleet. The new cars, which are expected to start arriving by 2018, will allow a 30-35% increase in capacity as well as increased reliability. The Green Line Extension project will add 6 new stops north of the City, serving an average weekday ridership of 45,000 by 2030.

6) North Washington Street Bridge Priority Bus Lane

The City of Boston's North Washington Street Bridge project now includes a priority bus lane in the inbound direction from Charlestown. The new lane will help people who ride the MBTA's 92, 93, and 111 bus routes get to work faster, and help the bridge move more people faster.



The North Washington Street Bridge design includes wide sidewalks, protected bicycle lanes, and a priority bus lane for inbound transit.
Source: Rosales + Partners; MassDOT.

MOTORIZED TRAFFIC

1) Improved Signal Timing

Thanks to the significant amount of infrastructure and development projects in the neighborhood, nearly every traffic signal will be retimed and some will also include geometric changes or Adaptive Signal Technology (AST) in the next one to five years—potentially sooner. AST monitors traffic in real time and can be programmed to react to it. In this way, AST can help shorten the duration of "rush hour" traffic by better managing traffic before and after the heaviest traffic time. Only two traffic signals on Cambridge Street have not been scheduled for upgrades, at Sudbury Street and New Chardon Street.

2) Improved Signage and Pavement Markings at Haymarket Square

The Bulfinch Crossing development project, currently under construction on the site of the Government Center Garage, has committed to improving the signals, signage, and pavement markings at all major intersections nearby, including at Haymarket Square.

3) Storrow Drive Realignment and Charles Circle Improvements

A study is currently underway to look at the possibility of realigning Storrow Drive to simplify access to/from Storrow Drive, expand green space, and improve access to Massachusetts Eye and Ear Infirmary (the sponsor of the study). The improvements would also make changes to Charles Circle.

After removing the community-suggested action items related to the existing projects, the project team worked to further narrow down the list to give the community a concise and legible set of options. Fifteen items were identified that were outside of the project scope or the City of Boston's jurisdiction, and a dozen others were deemed infeasible due to physical constraints or other issues. **Figure 21** depicts the process described in this section.

The remaining ideas, supplemented with a few emerging best practices, were consolidated into 41 possible Action Items for the community to consider and prioritize.

Figure 21. **Action Item Creation Process**

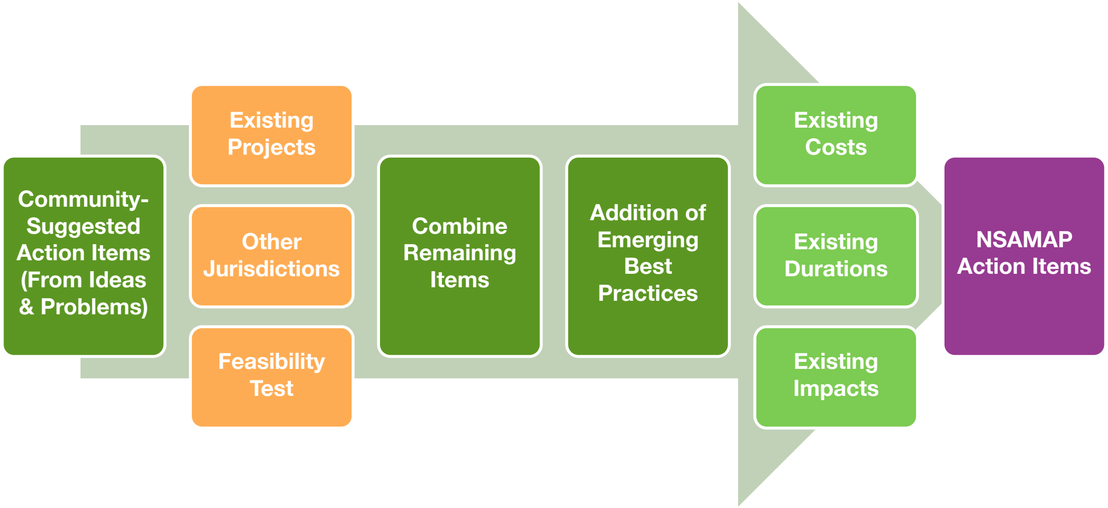
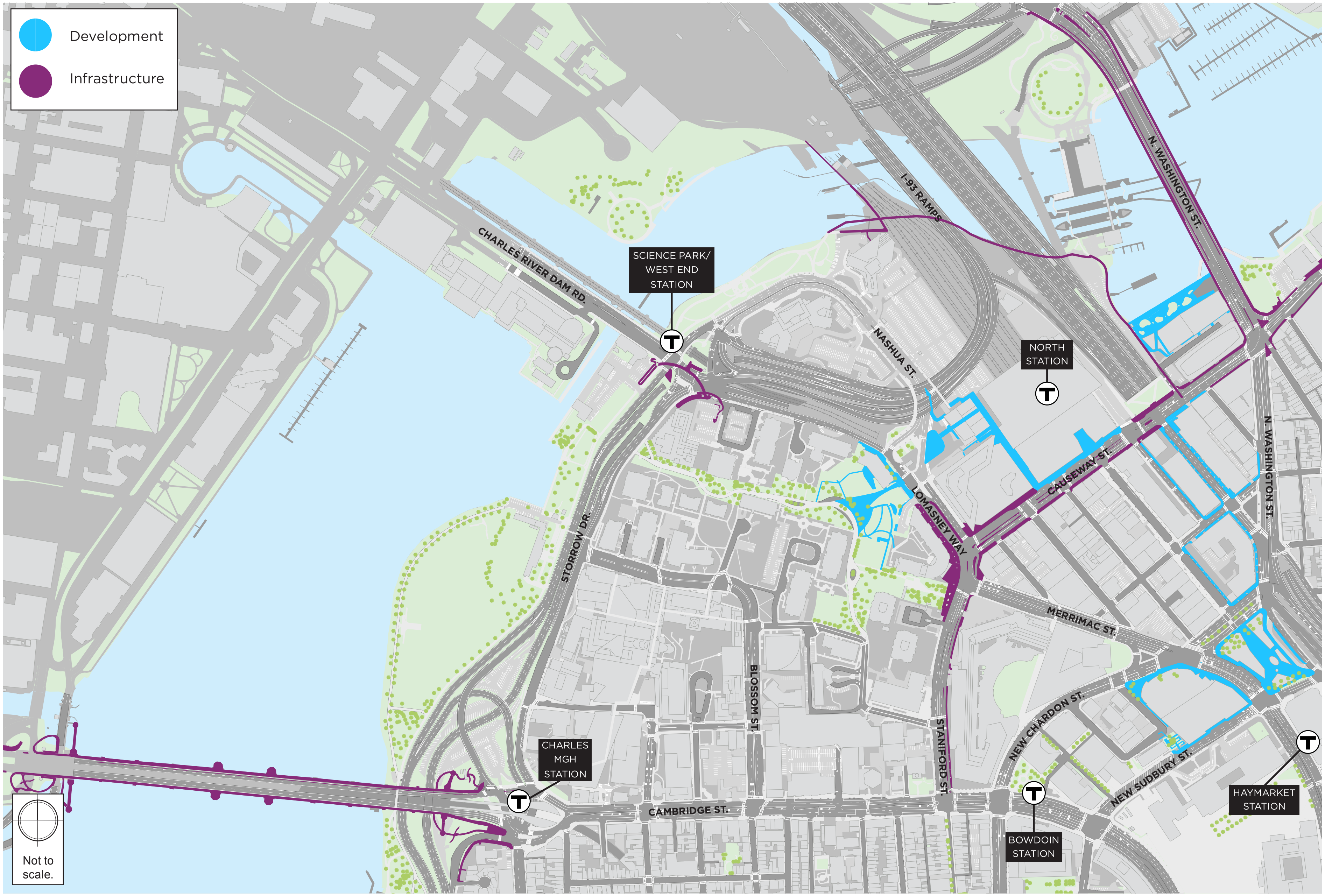


Figure 22. Built Environment Changes from Development and Infrastructure Projects



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5. Prioritizing Action Items

Having gone through the process of paring down a list of 188 community-suggested action items to a concise and legible list of 41 possibilities, a community meeting was held and an online survey created to gather peoples opinions on which of the 41 were most important to achieve. At a meeting in November 2016, residents and other meeting participants used a point system to assign values to the projects they were most passionate about. Online, a ranking system was used. The combined results showed a clear preference for 18 Action Items which are now included in the Action Plan.

Points Poll Method and Results

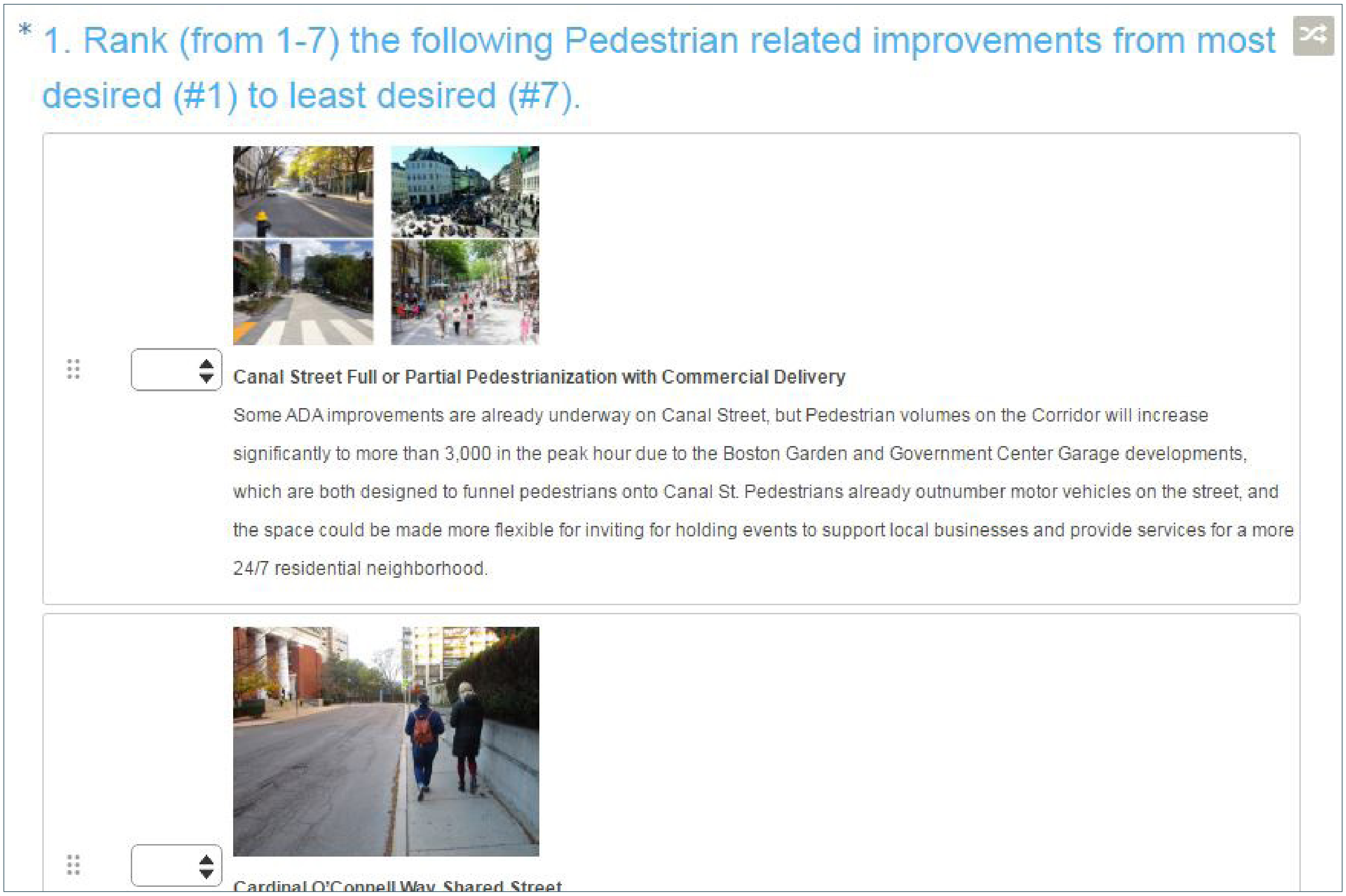
PUBLIC MEETING #4

After a brief presentation, attendees at the November 15, 2016 public meeting participated in a point poll exercise in order to prioritize action items. The use of stickers representing different values allowed the project team to better understand people's choices. The point system helped the project team discern between projects that attracted a few passionate supporters and projects that garnered broad support. Each person was given 1,000 points: six (6) green dots worth 100 points each, four (4) yellow dots worth 50 points each, and eight (8) blue dots worth 25 points each, and were asked to distribute them among the 41 Action Items around the room. The 41 Action Items were listed on display boards and grouped by mode.

A meeting attendee considers where to place points among various pedestrian environment Action Items. In addition to a description of each action item, attendees were also provided an estimation of cost, duration, and impact, as well as which shared goals the Action Item is related to. Image: Howard Stein Hudson.

Online Ranking Poll Method

Following this meeting, feedback was also encouraged through a ranking system using the Survey Monkey online application. The survey was advertised through the project website and email list, as well as at two additional pop-ups at the Charles/MGH MBTA Station and North Station in early December 2016. Respondents ranked their priorities within each of the different modes. The order in which the items appeared was randomized, further validating the results. 246 people participated in the online ranking poll.



* 1. Rank (from 1-7) the following Pedestrian related improvements from most desired (#1) to least desired (#7).

Canal Street Full or Partial Pedestrianization with Commercial Delivery

Some ADA improvements are already underway on Canal Street, but Pedestrian volumes on the Corridor will increase significantly to more than 3,000 in the peak hour due to the Boston Garden and Government Center Garage developments, which are both designed to funnel pedestrians onto Canal St. Pedestrians already outnumber motor vehicles on the street, and the space could be made more flexible for inviting for holding events to support local businesses and provide services for a more 24/7 residential neighborhood.

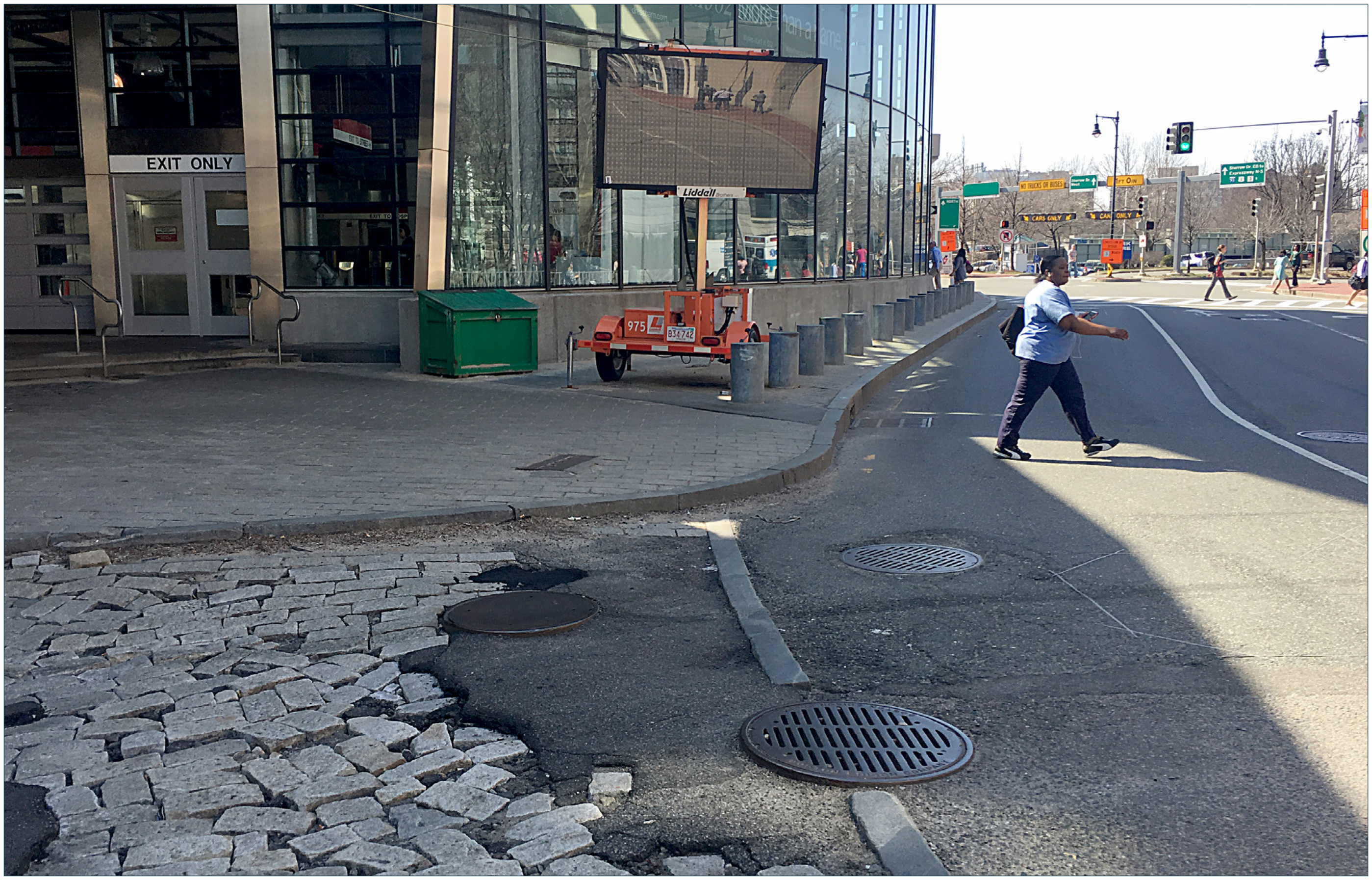
Cardinal O'Connell Way Shared Street

Respondents to the online poll were required to rank each of the Action Items within a mode.

Results

Scores from both the online ranking poll and the public meeting point poll were normalized and combined to create the ranked list of Action Items below. The top three most popular action items were: *Cambridge Street Protected Bike Lanes*, *Canal Street Pedestrianization with Commercial Delivery*, and *Lomasney Way/Nashua Street/Martha Way Improvements* (see **Appendix A** for a full accounting of online and public meeting results).

These poll results helped guide the creation of the final Mobility Action Plan which is detailed in the next section of this report. Some items, particularly those that were related by location, were grouped together to help in implementation.



People commonly use the rear exit of Charles/MGH MBTA Station on the Red Line, but the exit was never designed for regular use and does not comply with the American Disabilities Act. It also does not have crosswalk or sidewalk connections for pedestrians. Image: Howard Stein Hudson.

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6. The Action Plan

After engaging hundreds of residents, business owners, and commuters in a conversation about mobility in the North Station Area, a few robust themes emerged along with the Shared Goals of *Safety*, *More Understandable*, *More Choices*, and *Less Congestion*. People are frustrated with traffic congestion not only when they are sitting in a car, bus, or shuttle, but also when they are subjected to it as a cyclist or pedestrian. People who live and work here are interested in improvements that make all their neighborhood experiences safer and more enjoyable, including better places to bike and walk, more places to shop, a transit system that is more reliable and understandable, and reducing as much traffic volume as possible.

While eliminating traffic completely is not possible in the Downtown core, this Action Plan recommends changes that will encourage people to use options other than driving. With an improved understanding of transit and shared mobility options, and stronger incentives from their workplaces to use them, people can make choices that reduce traffic in the neighborhood. With bicycle accommodations that feel safe, more people will bike. With more shops and services nearby, walking or biking will become an option for more trips. And with streets and crossings built for pedestrian comfort, convenience, and service, more people may choose to walk to transit instead of driving directly to work. The Action Plan can also improve local traffic circulation and access to parking by simplifying street directions in the Bulfinch Triangle, adjusting curb uses to help reduce double parking, and convincing some people not to drive through transportation demand management efforts.

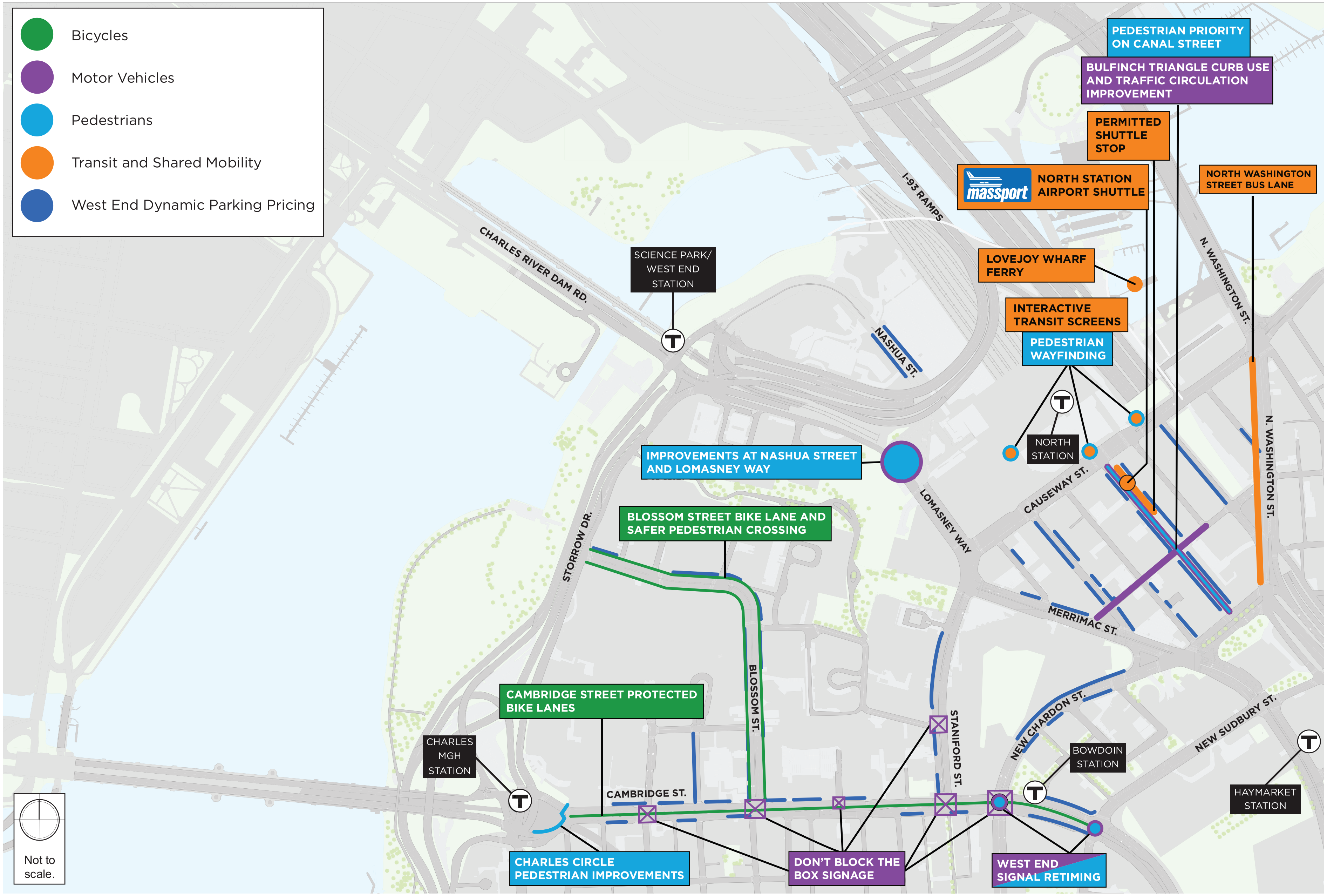
The Action Plan is separated into Short-Term Action Items, 1 – 5 years (**Figure 23**); and Long-Term Action Items, 6 years or more (**Figure 25**). As part of the NSAMAP process, several of the Action Items are being brought to conceptual design, including *Pedestrian Priority on Canal Street*, *Bulfinch Triangle Access Improvements*, and *Charles Circle Pedestrian Improvements*. Details on these designs are in **Section 7**.

PUBLIC MEETING #5

The concept of the action plan was presented to the community at the fifth public meeting on January 18, 2017. Many attendees were excited by a number of elements of the Action Plan, including **Canal Street Pedestrianization**, shuttle consolidation, and transit priority lane on North Washington Street. While there was general satisfaction in the mix of modes present in the final plan, there were concerns about vehicle access and remaining bicycle network improvements. Several attendees mentioned the latter, specifically in regard to Cambridge Street, which they feel is a key bicycling route. Residents also expressed support for long-term regional efforts outside this plan, such as the North-South Rail Link.

In the period following this meeting, emails were received relating to the conceptual plan, and the prioritization of some elements. A majority of comments echoed the concerns mentioned above with regard to bicycle improvements in the Action Plan. Of the remainder, several expressed feedback related to specific access concerns within the Bulfinch Triangle, since that had been identified as a concept being developed for short-term implementation. These comments were factored into the **Bulfinch Triangle Access Improvements** concept.

Figure 23. **Short-Term Action Items Map**


Bicycles
Motor Vehicles
Pedestrians
Transit and Shared Mobility
West End Dynamic Parking Pricing
PEDESTRIAN PRIORITY ON CANAL STREET
BULFINCH TRIANGLE CURB USE AND TRAFFIC CIRCULATION IMPROVEMENT
PERMITTED SHUTTLE STOP
NORTH STATION AIRPORT SHUTTLE
massport
NORTH WASHINGTON STREET BUS LANE
LOVEJOY WHARF FERRY
INTERACTIVE TRANSIT SCREENS
PEDESTRIAN WAYFINDING
NORTH STATION
SCIENCE PARK/ WEST END STATION
IMPROVEMENTS AT NASHUA STREET AND LOMASNEY WAY
BLOSSOM STREET BIKE LANE AND SAFER PEDESTRIAN CROSSING
CAMBRIDGE STREET PROTECTED BIKE LANES
CHARLES MGH STATION
CHARLES CIRCLE PEDESTRIAN IMPROVEMENTS
DON'T BLOCK THE BOX SIGNAGE
WEST END SIGNAL RETIMING
BOWDOIN STATION
HAYMARKET STATION
CHARLES RIVER DAM RD.
I-93 RAMPS
NASHUA ST.
N. WASHINGTON ST.
N. WASHINGTON ST.
CAUSEWAY ST.
LOMASNEY WAY
MERRIMAC ST.
STORROW DR.
BLOSSOM ST.
STANIFORD ST.
NEW CHARDON ST.
NEW SUDBURY ST.
CAMBRIDGE ST.
Not to scale.

NEW TRAFFIC SIGNAL AND INTERSECTION IMPROVEMENTS AT LOMASNEY WAY AND NASHUA STREET

As part of their mitigation commitments, the Garden Garage development has agreed to make significant improvements to the intersection of Lomasney Way and Nashua Street in the short term. This intersection has been identified as a problem area for pedestrians, cyclists, and drivers. When the Garden Garage project is built, a more direct way to access MGH and points beyond will open up via Thoreau Path. This is likely to increase pedestrian traffic and require a new signal to manage the crossing. It will be essential to create clear and safe guidance for pedestrians and vehicles as part of this redesign. Further improvements for cyclists at this intersection are included in the Long-Term Action Items.

The current design for the Garden Garage Project shows a new connection to Thoreau Path. Source: Elkus Manfredi Architects; Garden Garage.

COST	High
POPULARITY	High
IMPACT	Medium-High
AGENCY	BPDA, BTD

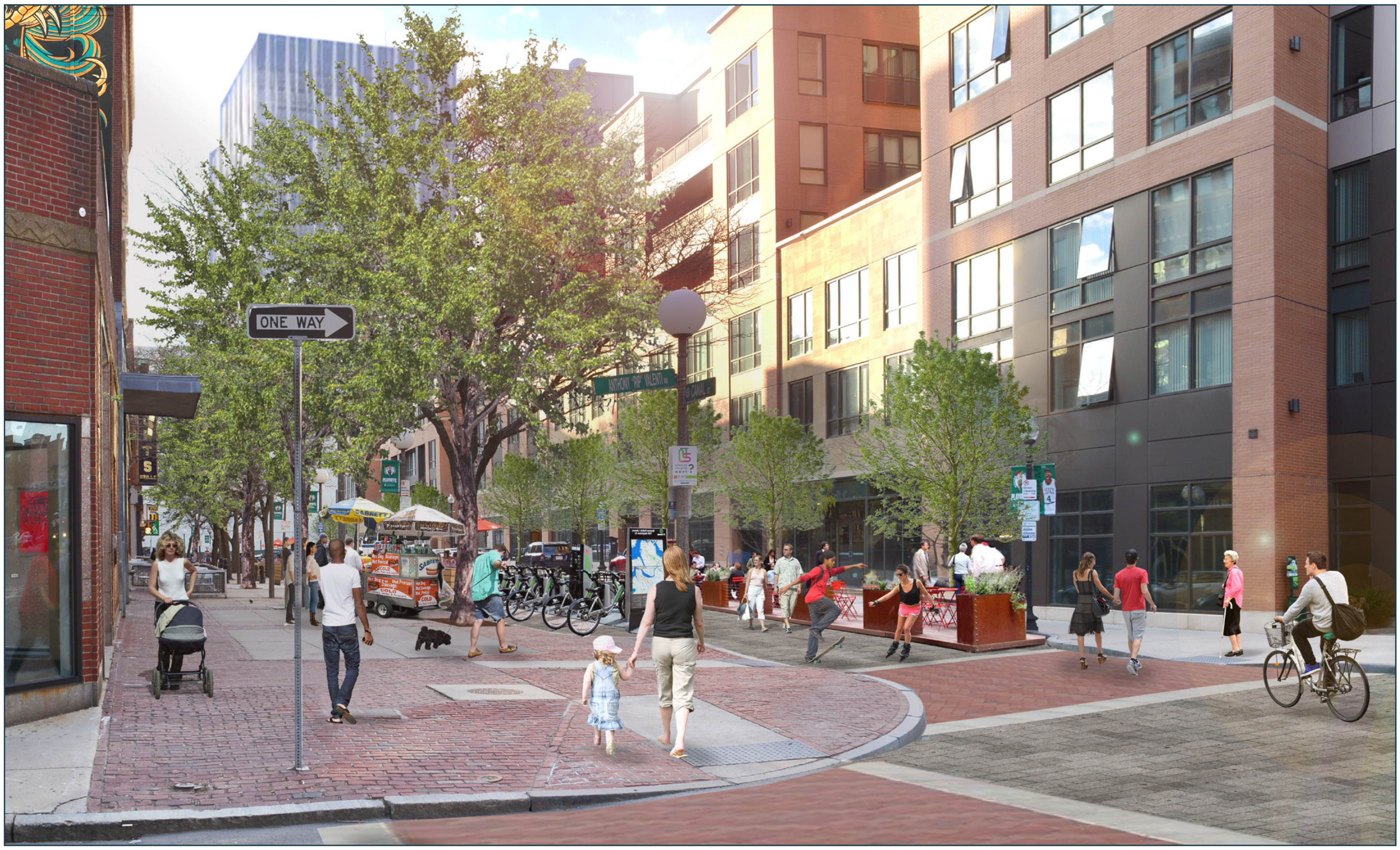
SHARED GOALS

- Safety
- More Understandable

Short-Term Action Items (1 – 5 Years)

PEDESTRIAN PRIORITY ON CANAL STREET

Nearly 2,000 people an hour make their way down Canal Street in the morning and evening rush hours today. In the evenings, a similar number are also making their way to North Station down Friend Street. In the near future, two major developments—Hub on Causeway and Bulfinch Crossing—are poised to double or possibly triple this number. Hub on Causeway's new entrance—which includes new shopping areas, access to TD Garden events, and North Station—is directly on axis with Canal Street, creating a major new destination on the street. This will funnel the existing flow of commuters coming to North Station onto Canal Street, but the project is also predicted to generate 983 completely new pedestrian trips in the a.m. peak hour and 2,019 new pedestrian trips in the p.m. peak hour. Given existing pedestrian patterns, it can be assumed that a large portion of those new trips will include a walk down Canal Street. At the other end of Canal Street, the last phase of the Bulfinch Crossing development includes a reconstruction of the area over the Haymarket MBTA Station. The proposed pedestrian space is designed to funnel pedestrians from the Congress Street/Faneuil Hall area who may have formerly taken Friend Street to North Station onto Canal Street. Lastly, the One Canal residential project is also attracting more walkers to Canal Street. The combination of all of these factors is likely to double or triple the number of pedestrians on Canal Street, possibly putting it on par with Downtown Crossing's Winter Street, one of the City's busiest pedestrian thoroughfares.



This rendering shows proposed interventions to liven the street near the intersection of Canal Street and Valenti Way. Source: NBBJ.

Boston's PWD has been considering a standard replacement of Canal Street's deteriorating sidewalks, but the changing neighborhood around the Bulfinch Triangle and these increased pedestrian numbers create the possibility of a new street design that prioritizes pedestrians, while also providing for commercial delivery and other necessary uses. With that reconstruction years away, there is time to experiment with different designs and discover a new, more pedestrian-friendly future for the street.

How this feature might look was developed in a series of community designed charrettes in March 2017. As an initial step, the City opened the street to pedestrians only at the Open Canal Street event on July 8th, 2017.

Four Barrel Parklet on Valencia Street, San Francisco. Source: Refinery Blog.

COST	Low
POPULARITY	High
IMPACT	High
AGENCY	PWD, BTD, Mayor's Office

SHARED GOALS

Safety

More Choices

Terrace on Saint Catherine Street, Montreal. Source: mtlblog.com.

Bell Street, Seattle. Source: TIUA International Photography

PUBLIC MEETING #6

CANAL STREET AND BULFINCH TRIANGLE DESIGN CHARRETTES

In a pair of community design charrettes for Canal Street held during the day and in the evening of March 21, 2017, residents and business owners helped define how changes to Canal Street can begin with some temporary, seasonal changes. Like Winter Street in Boston's Downtown Crossing neighborhood, many Canal Street businesses do not benefit from back of house deliveries. Also, a new hotel planned for the corner of Canal Street and Valenti Way will likely need access for valet parking and taxis. Changes to Canal Street therefore need to enhance the pedestrian environment and reduce, but not eliminate, vehicle use.

Six groups of community members at the charrettes strongly favored adding more pedestrian-centered elements near the corner of Canal Street and Valenti Way including:

- Parklets for Outdoor Seating
- Food Trucks
- Bike Share
- Bike Parking (Bike Corrals)
- Car Share
- Handicap Parking

They also asked to preserve some uses for motorized traffic such as:

- Handicap Parking
- Pick up and Drop Off Zones near Alphagraphics/Bay Cove Human Services and at the Avenir Building
- Commercial Parking Zones

Community members also retained some metered parking on the street, and some curb uses in the rest of the Bulfinch Triangle were changed to help provide more metered and commercial parking on other streets in the area to mitigate these changes on Canal Street.

Schematics were created for a new, experimental set of curb uses for the street—one for the Winter Season (mid-October to mid-April) and one for the Summer Season (mid-April to mid-October).

These design charrettes also collected input on curb uses and street direction improvements for the Bulfinch Triangle Access Improvements. To celebrate the future possibilities of Canal Street, the Mayor's Office opened the street to pedestrians only, and closed the street to traffic, for a full day in the summer of 2017 for an "Open Canal Street" event.

Short-Term Action Items (1 – 5 Years)

CHARLES CIRCLE PEDESTRIAN IMPROVEMENTS

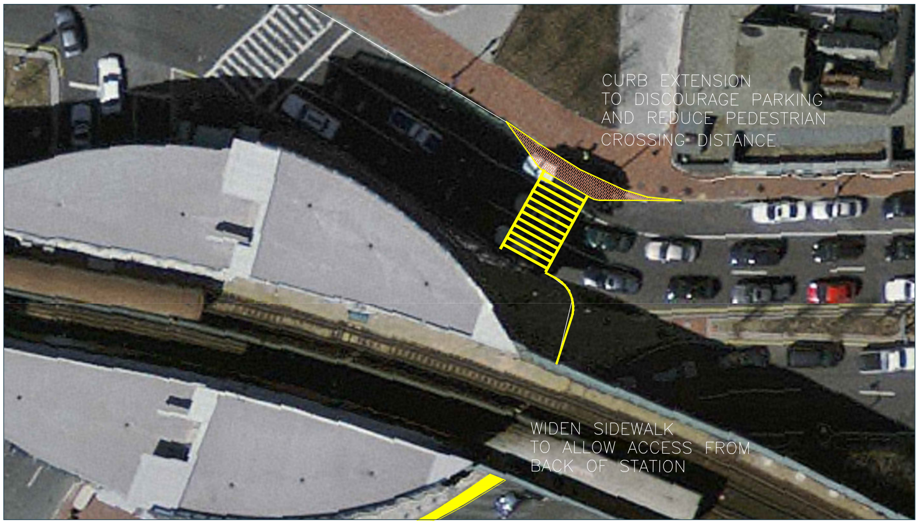
Many community members complained about the difficulty of accessing the Charles/MGH MBTA Station and the difficulty of accessing the neighborhood from the station. For many, including MGH patients new to the area, the first exit they see is the one at the bottom of the stairs from the train platform. However, this exit was designed as an emergency exit. When people exit through this door, they find themselves stranded on a traffic island with no crosswalk and no accessible sidewalk.

Adding ADA ramps and a crosswalk with a traffic signal would allow people to safely access the Yawkey Way Entrance of MGH. A widened sidewalk on the south side of the station would provide access to the existing sidewalk to Charles Street. The design also includes a new design for bikeways that guides cyclists through the circle in a safer manner.

COST	Medium
POPULARITY	High
IMPACT	High
AGENCY	BTD, MBTA, DCR

SHARED GOALS

- Safety
- More Choices
- More Understandable


CURB EXTENSION TO DISCOURAGE PARKING AND REDUCE PEDESTRIAN CROSSING DISTANCE
WIDEN SIDEWALK TO ALLOW ACCESS FROM BACK OF STATION

An additional crosswalk (seen here in yellow) would protect pedestrians in this common desire line.

Short-Term Action Items (1 – 5 Years)

BULFINCH TRIANGLE ACCESS AND CURB USE IMPROVEMENTS

COST	Low
POPULARITY	High
IMPACT	Medium-High
AGENCY	BTD

SHARED GOALS

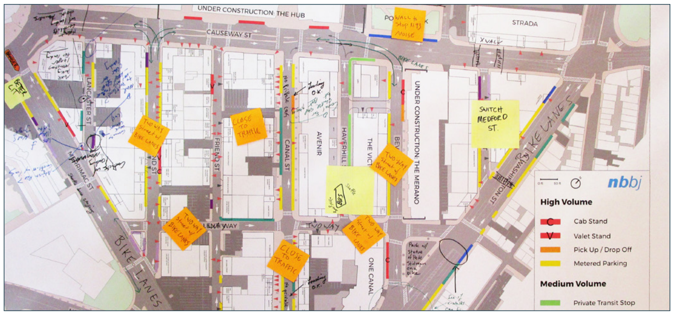
- Safety
- Less Congestion
- More Choices
- More Understandable

The Connect Historic Boston project has limited left turns onto and off of Causeway Street, which has made access to the Bulfinch Triangle more convoluted, according to community comments. Directing vehicles away from Canal Street would also make it more pedestrian friendly. At the sixth public meeting's design charrettes, local residents and business owners came up with ideas on how to address these problems with street direction changes and new curb uses to improve access to all points in the Bulfinch Triangle while preserving Canal Street as a more pedestrian-oriented street (see **Figure 24**). The resulting plan includes making Valenti Street two way between Portland and Haverhill Streets and reversing the direction of Friend Street, which is scheduled for reconstruction. The one-way directions at either end of Valenti Way are preserved. The new street directions make accessing all points in the Bulfinch Triangle easier for shuttle buses, local businesses, and their customers.

The changes on Valenti Street remove a small amount of commercial parking, which can be moved to other locations inside the Bulfinch Triangle. The plan also adds new handicap and metered parking and there is an opportunity for shared valet. All of these changes create a calmer environment on Canal Street to allow for a more pedestrian-friendly street while also making driving through the Triangle's other streets easier.

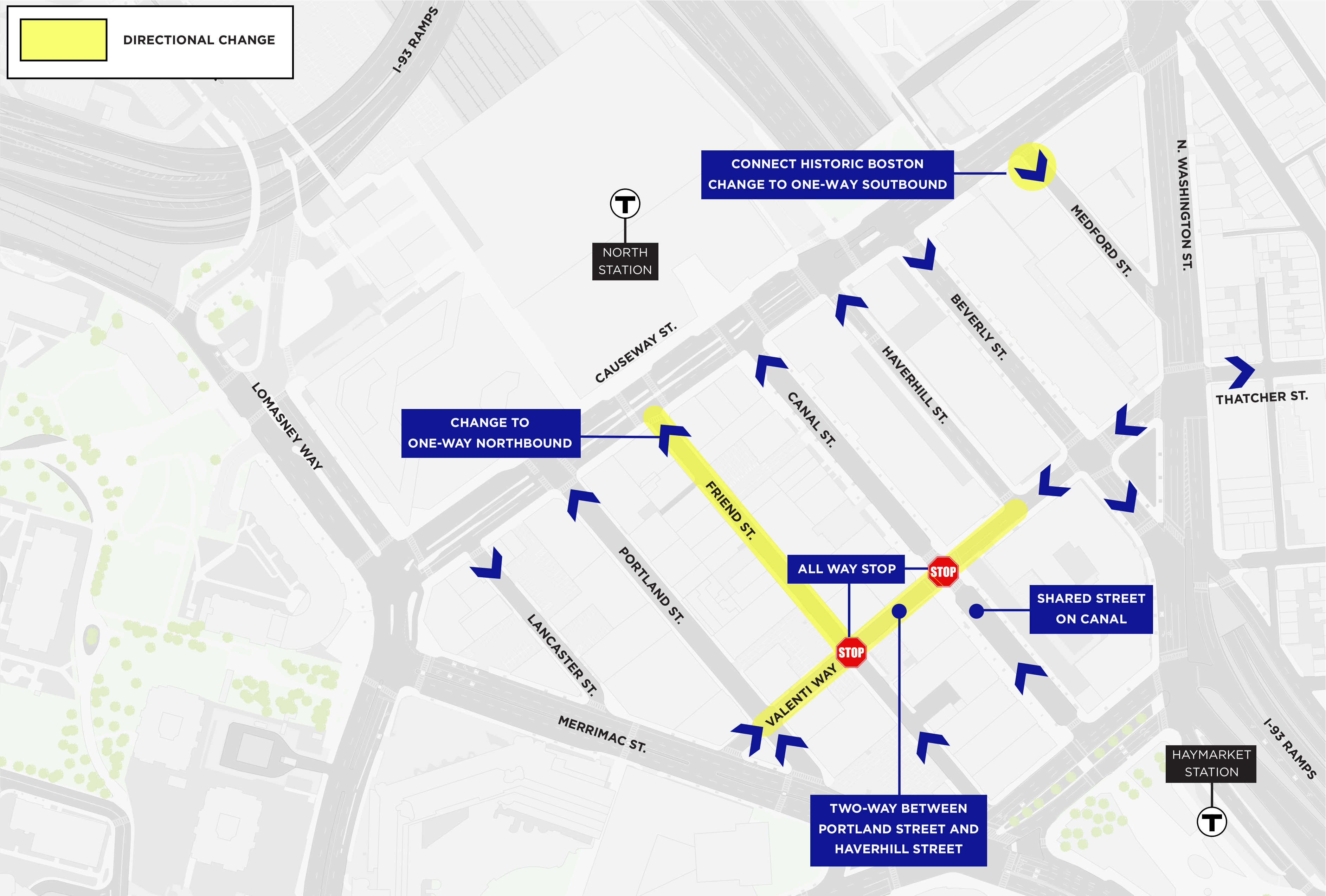
Another challenge was the location for police parking during TD Garden events. Currently police park along Haverhill Street beginning at 5 p.m., during peak shuttle use of the stop there, on every event night. When this parking occurs, shuttle operations begin to bottle up the Haverhill Street shuttle stop, creating traffic congestion and slowing down shuttles, some of which are crowded with passengers.

Friend Street is currently difficult to access due to left hand turn restrictions on Causeway Street.



During the lunch time charrette, attendees debated changing street directions and noted loading needs for local businesses.

Figure 24. Proposed Curb Uses and Street Directions within the Bulfinch Triangle



Short-Term Action Items (1 – 5 Years)

NORTH STATION AIRPORT SHUTTLE BUS

Based on community comments, NSAMAP encourages Massport to build on the success of its Back Bay – Logan Airport Shuttle by creating a new airport shuttle route from North Station, perhaps also including Kendall Square in Cambridge, on the route. Massport's own surveys of passengers and employees show that these two locations would be the second and third most popular (after Back Bay) for an airport shuttle. An analysis of the existing transit system's access to the airport revealed that the quickest travel times between Logan Airport and North Station is around 30 minutes at peak hours. A direct airport shuttle could potentially cut this time by two thirds, giving North Station Commuter Rail commuters and others a much stronger incentive to use transit to get to Logan, thus reducing traffic congestion in the area.

A Massport Shuttle already exists connecting Back Bay to Logan Airport. Image: Wikimedia.

COST	High
POPULARITY	Medium
IMPACT	High
AGENCY	Massport

SHARED GOALS

More Choices

Less Congestion

ENCOURAGE LOCAL EMPLOYERS AND RESIDENTIAL BUILDINGS TO REPORT PROGRESS ANNUALLY ON TDM GOALS

Transportation Demand Management (TDM) is the application of strategies and policies to reduce travel demand, often focusing on reducing Single Occupancy Vehicle (SOV) use. Strong TDM practices have yielded significant results for employers in states where reducing SOV use is mandated by law. All new large developments in Boston are asked to participate in TDM, and report annually to the City on TDM. However, what they are asked to include could be improved upon. Baseline data can be collected to determine appropriate goals for SOV reduction. The City, working with the buildings and/or employers, can work on strategies for how to meet those goals and continue to report on their progress. TDM strategies can be very effective in cities like Boston that have many travel options and extensive transit systems.

The New York Islanders take The Long Island Rail Road to the Barclays Center in New York as part of a 2013 publicity stunt to encourage fans to op for transit. Image: Long Island Rail Road.

COST	High
POPULARITY	Medium
IMPACT	High
AGENCY	BTD

SHARED GOALS

- More Choices
- Less Congestion

BEST PRACTICES

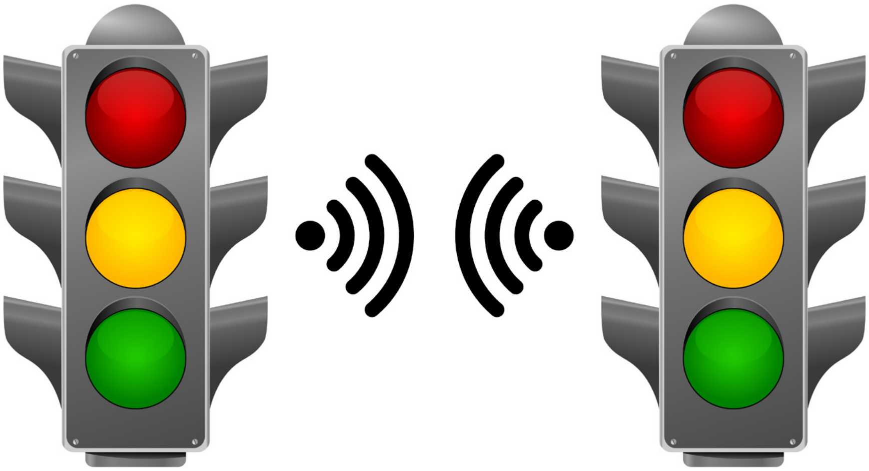
The State of Washington passed a Commute Trip Reduction Law in 1991 to help reduce carbon emissions and traffic congestion. The law requires all municipalities to report annually on commute trip reduction (also known as Transportation Demand Management (TDM)) goals, and all employers over 100 employees to report to their municipalities on the same. Cities like Seattle create goals for employers based on what they've learned from annual reports from other similar employers in the same or similar neighborhoods. The law is designed to give municipalities and employers latitude on how they reach their goals, resulting in a wide variety of approaches to TDM that other cities can learn from.

Washington State:
http://www.wsdot.wa.gov/transit/ctr
Seattle:
http://www.seattle.gov/waytogo/ctr.htm

Short-Term Action Items (1 – 5 Years)

ADAPTIVE SIGNAL TECHNOLOGY STUDY

New development in the City has helped pay for a study that is looking at the use of Adaptive Signal Technology (AST) in the area around Haymarket Square and other areas. AST monitors traffic in real time and can be programmed to react to it. In this way, AST can help shorten the duration of "rush hour" traffic by better managing traffic before and after the heaviest traffic time. AST is expensive compared to conventional traffic signals, but it can be effective in areas where conditions change on irregular schedules—such as areas with large events and heavy pedestrian traffic.



Adaptive Signal Technology manages traffic in real time.

COST	Medium
POPULARITY	Medium
IMPACT	Low
AGENCY	BTD

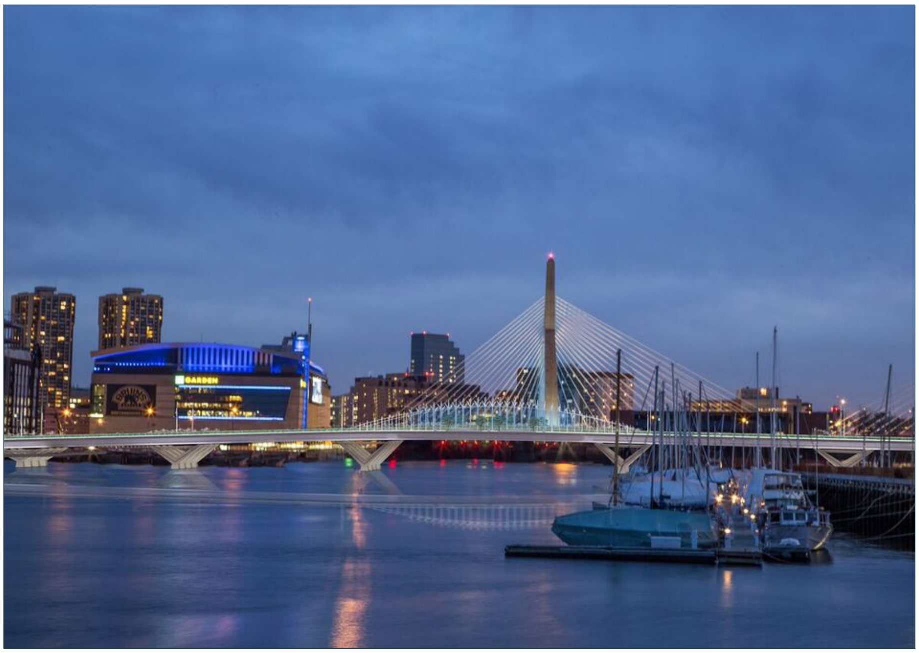
SHARED GOALS

Less Congestion

Short-Term Action Items (1 – 5 Years)

NORTH WASHINGTON STREET BUS LANE

The City of Boston/MassDOT's reconstruction of the North Washington Street Bridge will include an inbound bus lane to help more people move across the bridge faster. Lowering the delay for these buses helps reduce the "people delay" measure of the bridge, and encourages more people who drive to take the opportunity to ride a faster bus. The Action Plan supports a BTD proposal to continue that bus lane onto North Washington Street to the Haymarket MBTA Station. The majority of the bridge's bus passengers today get off the bus at the Medford Street bus stop on North Washington Street; the bus lane may encourage passengers to stay on the bus to Haymarket Station and be closer to their final destinations, reducing commuting times for thousands of people each day.

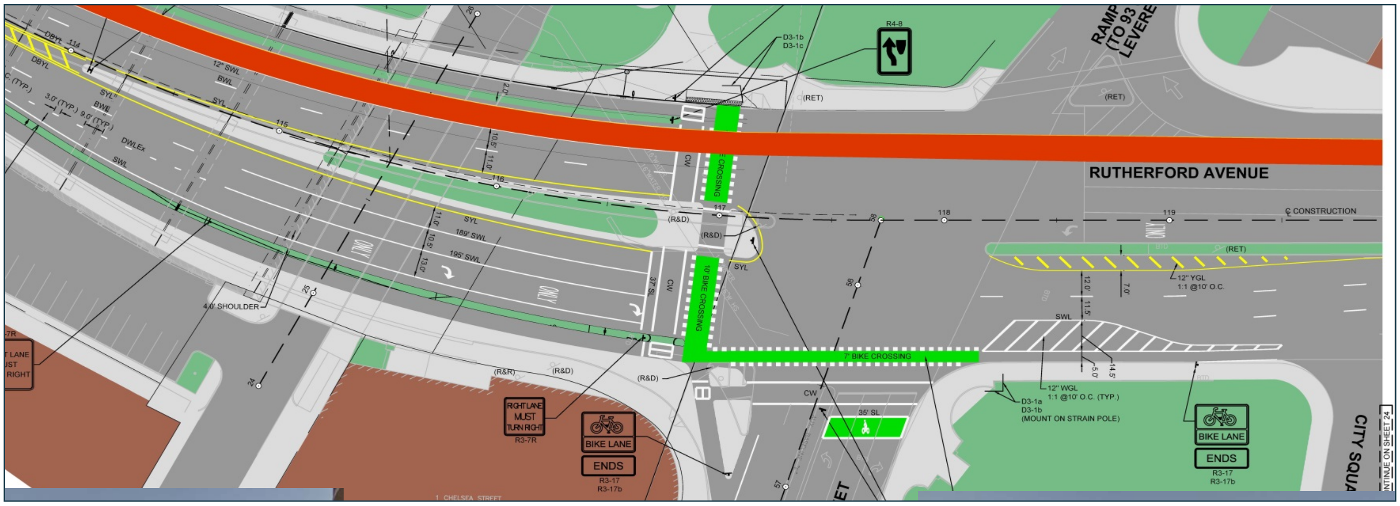


The North Washington Street Bridge proposed design shown in the foreground. Image: City of Boston.

COST	Medium
POPULARITY	Medium
IMPACT	High
AGENCY	BTD

SHARED GOALS

- More Choices
- Less Congestion



A portion of the 75% design plans for the North Washington Street Bridge showing a new inbound priority bus lane. Source: City of Boston.

CAMBRIDGE STREET PROTECTED BIKE LANE

Along with pedestrianizing Canal Street, a Cambridge Street Protected Bike Lane was the most popular idea in this Action Plan. Cambridge Street is a major connection for cyclists between jobs in the Downtown core, Cambridge, and Somerville. The Longfellow Bridge, Broadway (Cambridge), Hampshire Street (Cambridge), and Beacon Street (Somerville) to the north together is one of the busiest bike routes in Massachusetts. After the opening of the improved Longfellow Bridge, this ridership is likely to increase, and Cambridge Street will become the least comfortable link on this route. Though this roadway was reconstructed in the 1990s, the City is committed to exploring reconstruction options in the short-term.

Many commuters can be seen bicycling on Cambridge Street, but many report feeling unsafe doing so.

COST	High
POPULARITY	High
IMPACT	High
AGENCY	BTD

SHARED GOALS

- Safety
- More Choices
- More Understandable

PERFORMANCE-BASED PARKING METER PRICING

The City of Boston is running two pilot programs for performance-based meter pricing, one in Back Bay and the other in the South Boston Waterfront. In the Waterfront, the program hopes to increase the availability of on-street parking on streets in high demand by pricing them and other, less popular streets at market rates. Streets in high demand will cost more than nearby streets in lower demand. In Back Bay, the demand for parking on neighborhood streets is thought to be more uniform, so the pilot is experimenting with a uniform rate increase.

In both cases, data is being carefully recorded to determine the program's success in its goal to ensure a small amount of parking is always available, and to reduce unnecessary circling by drivers looking for parking spaces. Based on the results of these pilot programs, the City will consider a similar program for the North Station Area/West End and other parts of the City to help improve the utilization and efficiency of curbside parking.

Public meeting attendees were supportive of dynamic pricing for parking as a means of freeing up spaces for access to local businesses. Image: City of Sacramento, California.

COST	Low
POPULARITY	Medium
IMPACT	Medium
AGENCY	BTD

SHARED GOALS

Less Congestion

BLOSSOM STREET BIKE LANE AND SAFER PEDESTRIAN CROSSINGS

Blossom Street provides a useful connection to the Charles River Esplanade and the Paul Dudley White Bike Path via a footbridge over Charles Street and Storrow Drive. The street's four travel lanes are not needed to handle existing traffic. A road diet would create a much safer condition for the many pedestrians who cross the street every day on their way to MGH from North Station, without causing additional traffic congestion. A raised crossing at Blossom Street's intersection with Blossom Court would enhance safety for the high volumes of pedestrians crossing here. Additionally, a bike lane on Blossom Street would provide better access for MGH employees who bike to the Parkman Street bike parking cage and create a safe connection to the footbridge to the Charles River Esplanade.

Reducing travel lanes on Blossom Street would make it a safer place to bike and walk.
Image: Howard Stein Hudson.

COST	Low
POPULARITY	Medium
IMPACT	Medium
AGENCY	BTD

SHARED GOALS

- Safety
- More Choices
- More Understandable

CAMBRIDGE STREET SIGNAL RETIMING

Due to the large amount of development and infrastructure work underway in the neighborhood, all but two traffic signals in the entire Plan area are being retimed for current conditions. Via the WikiMap and pop-up sessions, these two signals (located on Cambridge Street at New Chardon Street and Sudbury Street) received complaints from motorists and pedestrians alike. In association with the Bulfinch Crossing project, BTD will also take a look at how these signals might lower pedestrian delay and reduce vehicular congestion.

Crossing Cambridge Street can be frustrating for pedestrians and vehicles alike.
Image: Howard Stein Hudson.

COST	Low
POPULARITY	High
IMPACT	Low
AGENCY	BTD

SHARED GOALS

- Safety
- More Understandable

Short-Term Action Items (1 – 5 Years)

PERMITTED SHUTTLE STOP NETWORK

COST	Medium
POPULARITY	Medium
IMPACT	High
AGENCY	BTD, MBTA, BPD

SHARED GOALS

- More Choices
- Less Congestion
- More Understandable

Between tourist trolleys, private shuttles to the Seaport and MGH facilities, and the EZ Ride Shuttle to Cambridge, there are more than 20 different bus operators in the North Station Area. Before construction moved the most common shuttle stop from Causeway Street to Haverhill Street, many residents and commuters complained of the traffic friction it caused on Causeway Street. For this reason and the new, narrower roadway design, it will not return to Causeway Street (though tourist trolleys still operate there at the MBTA Route 4 bus stop).

On Haverhill Street, the busy shuttle stop competes with pedestrians and truck deliveries in the morning, and pedestrians and police parking on many evenings (police park on Haverhill Street to staff TD Garden events). Both problems slow down shuttles as does other traffic on

The existing shuttle stop on Haverhill Street. Image: Howard Stein Hudson.

Haverhill Street in the peak hours, and block egress for the residents of The Victor apartment building. This problem is exacerbated on event nights when police parking forces shuttles to completely block Haverhill Street to make their stop. The problems on Haverhill Street can be addressed two ways: reducing and organizing Haverhill Street's other curb side uses (finding an alternative parking resource for police and providing some commercial parking on Haverhill Street in the morning—see ***Bulfinch Triangle Access and Curb Use Improvements***), and reducing the number of shuttles using Haverhill Street through shuttle consolidation. The South Boston Waterfront Sustainable Transportation Plan also calls for shuttle consolidation and the idea is widely supported by businesses and residents of the North Station Area.

The EZ Ride shuttle operated by the Charles River Transportation Management Association is a strong example of how shuttle consolidation can benefit the public good. The EZ Ride serves around 21 companies in Cambridge that might otherwise be operating their own shuttles.

There is an ongoing effort in the South Boston Waterfront to achieve the same result, led by the MCCA. So far, the MCCA's consolidated shuttle has brought together four companies and further consolidation is needed.

One way to encourage consolidation is to create a permitting system for shuttle stops. Instead of offering free access to the public curb space, requiring permits would encourage employers to consider more affordable options like consolidation. However, such a system would need to be implemented citywide to support its management. Plagued with an even more significant shuttle problem, the City of San Francisco has developed a best practice that Boston can learn from.

Tech workers board a shuttle bus in San Francisco. Image: Mark Andrew Boyer/KQED.

BEST PRACTICES

In order for shuttle operators to stop legally at any of San Francisco's over 200 designated shuttle stops, they need to pay for a permit. The permit fee is based on the number of stops the operator makes over the course of a year. The fee per stop is calculated to ensure the program is fully-funded, including salaries for two City staff to manage it. A rough estimate of the City of Boston's citywide shuttle stop network would include between 120 and 180 designated stops.

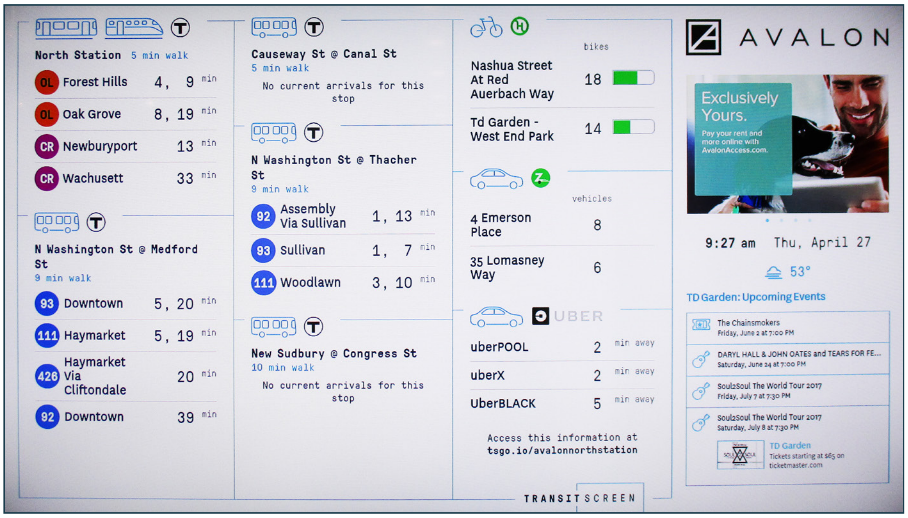
Another permit requirement is the sharing of real-time GPS information with the City, which allows the City to measure the actual number of stops made by operators and shuttle routes. The San Francisco Municipal Transit Authority (SFMTA) program is enforced by SFMTA transit inspectors and the City's parking control officers

Get more information on the SFMTA's shuttle permitting program from "Commuter Shuttle Policy and Pilot Program" January 2014 and the SFMTA website at: https://www.sfmta.com/projects-planning/projects/commuter-shuttle-program-2016-2017

Short-Term Action Items (1 – 5 Years)

PEDESTRIAN WAYFINDING & TRANSIT / RIDESHARING INFORMATION SCREENS

In 2015, the City worked with the Downtown Crossing Business Improvement District to create a wayfinding system that has proven popular and useful, and wayfinding is already planned to be one part of the Hub on Causeway project. The Avalon North Station residential building has installed a transit and ridesharing information screen in their lobby that informs residents when the next bus is coming, how soon the next ridesharing service could arrive, and more. These are examples that lend themselves well to the North Station Area, and should be considered for every new development in the neighborhood. The City will work with developers in the North Station Area to develop wayfinding signage that shows people the best way to walk to MGH, the North End, Beacon Hill, and the Esplanade. The City will require that all new large developments include transit and ridesharing information screens in their lobbies.



North Station 5 min walk

OL	Forest Hills	4, 9 min
OL	Oak Grove	8, 19 min
CR	Newburyport	13 min
CR	Wachusett	33 min

N Washington St @ Medford St
9 min walk

93	Downtown	5, 20 min
111	Haymarket	5, 19 min
426	Haymarket Via Cliftondale	20 min
92	Downtown	39 min

Causeway St @ Canal St
5 min walk

No current arrivals for this stop

N Washington St @ Thacher St
9 min walk

92	Assembly Via Sullivan	1, 13 min
93	Sullivan	1, 7 min
111	Woodlawn	3, 10 min

New Sudbury @ Congress St
10 min walk

No current arrivals for this stop

	bikes
Nashua Street At Red Auerbach Way	18
Td Garden - West End Park	14

	vehicles
4 Emerson Place	8
35 Lomasney Way	6

UBER

uberPOOL	2	min away
uberX	2	min away
UberBLACK	5	min away

Access this information at
tsgo.io/avalonnorthstation

TRANSITSCREEN

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9:27 am Thu, April 27

53°

TD Garden: Upcoming Events

- The Chainsmokers
  Friday, June 2 at 7:00 PM
- DARYL HALL & JOHN OATES and TEARS FOR FE...
  Saturday, June 24 at 7:00 PM
- Soul2Soul The World Tour 2017
  Friday, July 7 at 7:30 PM
- Soul2Soul The World Tour 2017
  Saturday, July 8 at 7:30 PM

TD Garden
Tickets starting at $65 on ticketmaster.com

This wayfinding system in the lobby of the Avalon North Station residential building gives residents more information about their transportation options. Image: Howard Stein Hudson.

COST	Low
POPULARITY	Medium
IMPACT	Medium
AGENCY	BPDA, BTD

SHARED GOALS

- More Choices
- Less Congestion
- More Understandable

Short-Term Action Items (1 – 5 Years)

DON’T BLOCK THE BOX SIGNAGE ON CAMBRIDGE STREET

Motorists and others have reported that gridlock is consistently causing problems on Cambridge Street, including blocking left hand turns into the Whole Foods Market in the Charles River Plaza. BTD will install new “Don’t Block the Box” signage, and BPD’s Precinct A1 will receive a new cadet this year who could be assigned to enforce the posted rule and help determine if further pavement markings are necessary to resolve the problem.

COST	Low
POPULARITY	High
IMPACT	Unknown
AGENCY	BPD, BTD

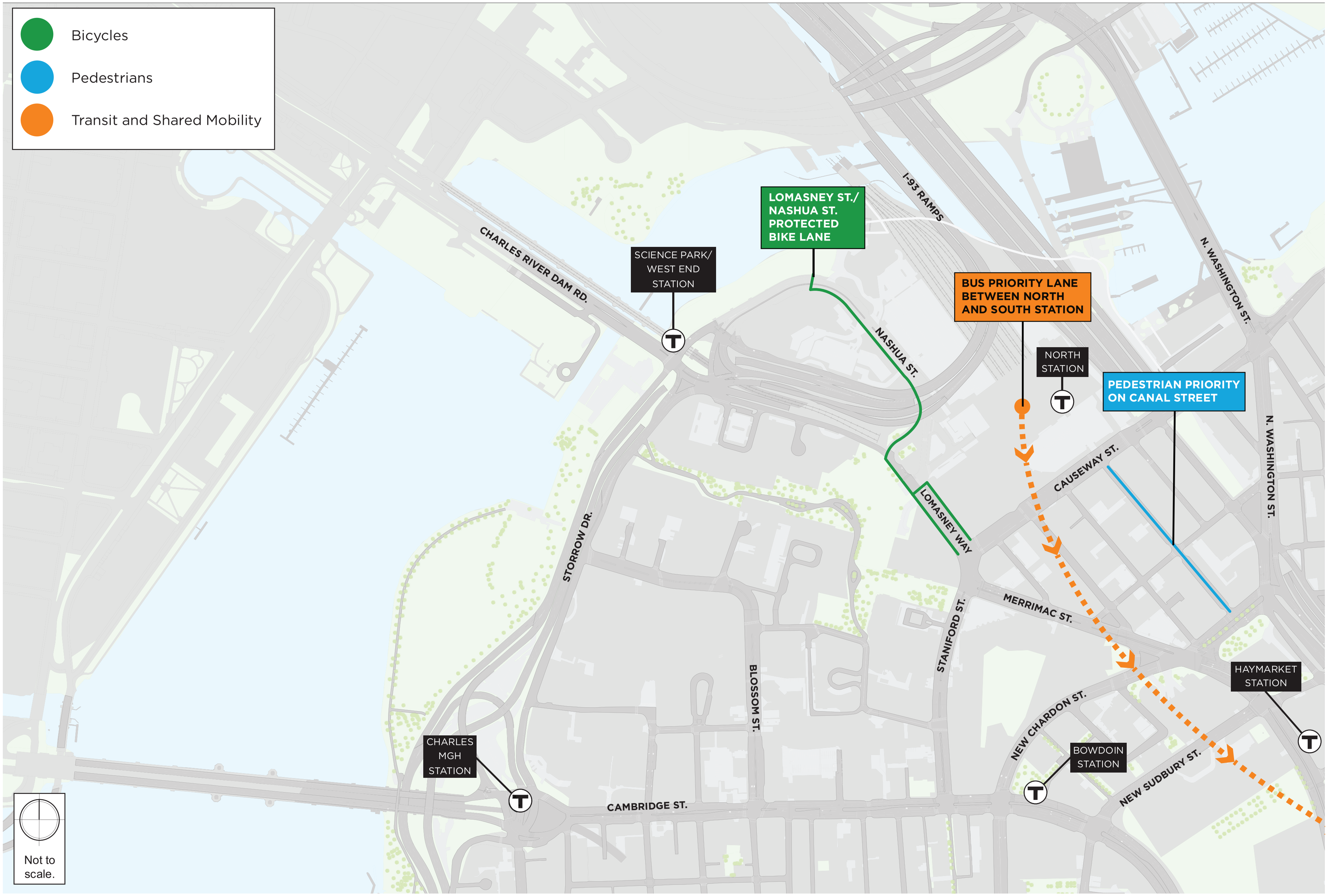
SHARED GOALS

- More Choices
- Less Congestion
- More Understandable

“Don’t block the box” signs help remind motorists that signal operations are impacted when they block traffic. Image: City of Austin, Texas.

A new class of police cadets are sworn in at the Boston Police Department. Image: Boston Globe.

Figure 25. Long-Term Action Plan Map



LOMASNEY WAY/NASHUA STREET PROTECTED BIKE LANE

On the WikiMap, at pop-up events, and in public meetings, people who walk on Martha Road and on Charles River Dam Road complained about bicycles on the sidewalks. Cyclists also complained that there is no safe and direct way to get from Lowell Square to Cambridge and the Charles River. When the Connect Historic Boston project is complete, it is likely that more cyclists will follow this desire line to Cambridge. Safer bike accommodations on Nashua Street could attract cyclists away from Martha Road and direct them to the east side of Charles River Dam Road (which is less frequented by pedestrians). The Nashua Street bike accommodations would connect from the Lomasney Way bike lanes and the Connect Historic Boston protected bike lanes and extend down Nashua Street to connect to the Charles River Esplanade.

Some cyclists already favor Nashua Street but protected bike lanes might draw more cyclists away from Martha Road where they come into conflict with pedestrians. Image: Howard Stein Hudson.

COST	Medium
POPULARITY	High
IMPACT	High
AGENCY	BTD

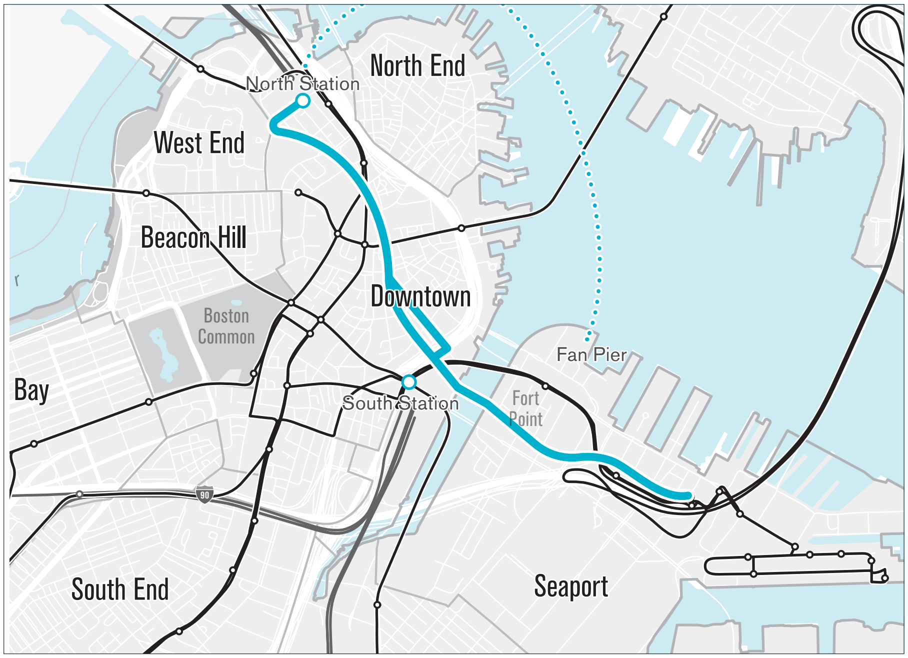
SHARED GOALS

- Safety
- More Choices
- Less Congestion
- More Understandable

Long-Term Action Plan (6 years or more)

BUS PRIORITY LANE BETWEEN SOUTH STATION, THE SEAPORT, AND NORTH STATION

There are limited route options for a bus priority lane between South Station and North Station. These could include Congress Street (paired with Merrimac Street or North Washington Street), the surface streets adjacent to the Rose Kennedy Greenway, portions of I-93, or some combination of smaller side streets. Some of these streets also serve as the main arterials between the north and south sections of Downtown Boston, and are thus congested and physically constrained. There are no opportunities to add new roadway width, but a north-south connector route would benefit the Commuter Rail system, the Seaport to North Station private shuttle system, and provide new opportunities for MBTA bus service. The Go Boston 2030 plan prioritizes this “North Station to South Boston Rapid Bus” which was also highlighted in the South Boston Waterfront Sustainable Transportation Plan. Notably, this route could potentially also benefit the North Station Airport Shuttle Action Item included in this Plan. A study of the existing and potential uses of a transit priority lane here would help progress this idea and make decisions on a preferred routing and design.



Go Boston 2030 and the North Station Area Mobility Action Plan received several comments suggesting the benefits of a priority bus lane connecting regional commuters to the seaport. Source: Go Boston 2030 Report.

COST	High
POPULARITY	Low
IMPACT	High
AGENCY	BTD

SHARED GOALS

More Choices

Less Congestion

Long-Term Action Plan (6 years or more)

SHARED STREET CONSTRUCTION ON CANAL STREET

Though Canal Street will likely need to continue serving certain motor vehicle needs for the foreseeable future, the massive pedestrian flows expected from new development indicate that traffic generated here should give priority to pedestrians. Design influences behavior, and a shared street design on Canal Street can influence low-speed, careful traffic that allows pedestrians to move more freely on the street. A shared street design also promises to promote the Bulfinch Triangle as a destination in Boston, a shopping and dining destination emerging from the shadow of the Central Artery and elevated Green Line structures.

Making a street more pedestrian friendly involves creating a design that encourages cars to slow down by giving them the feeling they are intruding on a pedestrian space. This example on Bell Street in Seattle includes parking as well as seating areas and plantings. Image: SVR Design.

COST	Low
POPULARITY	High
IMPACT	High
AGENCY	PWD, BTD

SHARED GOALS

- Safety
- More Choices

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7. Summary of Comments on Draft Report

Canal Street was closed to motor vehicles on July 7, 2017 to open the street to the community for Open Canal Street—an event hosted by the City of Boston. Local businesses helped take over the street and community members came to envision a new future for Canal Street. Passersby were asked what they'd like to see on a future pedestrian-friendly shared street and some ideas included a beer garden, wellness education classes, and more street trees.

On June 19, 2017, the draft version of this report was presented for comments in a public meeting. "Immediate" Action Items were also presented, including a concept for Charles Circle, as well as changes to street directions and curb uses in the Bulfinch Triangle, including pedestrian elements along Canal Street that calm traffic and encourage more pedestrian space.

The draft report was published to the NSAMAP project page on the BPDA website and a comment period of three weeks was proposed, and later extended to July 12 to accommodate summer vacations and other events.

Of the 59 comments received on that draft report, the majority were positive and many included requests for changes. Just over half of the comments submitted (31) were nearly identical letters and the rest were distinct individual comments. Respecting the extra time spent by the original content creators for responding in detail, and the difficultly in determining if the 31 senders of the nearly identical letter considered and reviewed the full draft report (as each repeated the same comments on the same four items without variation), the form letters and individual comments were considered separately.

PUBLIC MEETING #7

On June 19, 2017 the final public meeting for the Action Plan was held at the West End Museum on Staniford Street. The NSAMAP Final Report was described, having been released to the public the previous week, and new design work on the *Bulfinch Triangle Access and Curb Use Improvements* was presented based on input from the community design charrettes. Generally, the plan was well-received; however, a few points of discussion did arise in the question and answer period.

It has been clear throughout the process that TD Garden event-nights cause headaches for local residents. On this occasion, neighbors complained of limo-parking along Causeway Street, and traffic tie ups on Martha Road. These and other problems have been part of an ongoing community conversation with TD Garden, and will continue via the Mayor's Office of Neighborhood Services.

One attendee highlighted the need for improvements at the intersection of Valenti and North Washington Streets, where the future 88 North Washington Street Hotel has been approved. He noted that a directional change of one-way Medford Street might help to alleviate the situation, but it is also known that other stakeholders in the neighborhood have asked that it not be changed. The future of this street is a topic for ongoing discussion in the neighborhood.

An apparent problem with the right hand turn lane from Merrimac Street to Causeway Street was noted at the meeting, which has since prompted BTD to investigate potential improvements there. This process was ongoing at the time of writing.

Aside from points that were repeated in comment letters, there was a discussion of the potential impacts the *North Washington Bridge Reconstruction* will have on NSAMAP action items, such as the *Bulfinch Triangle Access and Curb Use Improvements*. That project is designed not to allow traffic to cut through the Triangle, so the action item would neither help nor hurt the traffic impacts of the bridge construction. However, they may interact with the timing of the *North Washington Street Bus Lane* item, as that project is intended to continue the bus lane planned for the new bridge.

Lastly, the City was asked if there would be future reportbacks on the plan. While there is no specific schedule, there will be separate public processes as opportunities to implement specific action items occur. It is also important to stay engaged with the ongoing development projects in the neighborhood. The Action Plan is as much a guide for the City's ongoing work to improve the North Station Area as it is a guide for the community activists who helped create it on how to improve their commutes, their neighborhood, and their quality of life.

North Station Area
Mobility Action Plan
Draft Report | June 2017

Community Comments on NSAMAP Draft Report

The form letters received had four main points: they supported the *Cambridge Street Protected Bike Lanes* and *Blossom Street Bike Lanes and Safer Pedestrian Crossings* Action Items; they asked for a pilot of the *Cambridge Street Protected Bike Lanes* in the short term; and they requested that the *Lomasney Way/Nashua Street Protected Bike Lanes* be moved to a short-term priority. The latter request is addressed below, however, piloting protected bike lanes on Cambridge Street is challenging due to the narrow widths of the street and the presence of sidewalk curb extensions at many crosswalks.

Among the individually-written letters, the most repeated comments were: support for *Cambridge Street Protected Bike Lanes* (10), support for *Pedestrian Priority on Canal Street* (7), and requests to move the *Lomasney Way/Nashua Street Protected Bike Lanes* action item to the short-term action item list (7). In response to the latter request, the City of Boston requested that Equity Residential, the developer of the project that will replace the Garden Garage, not preclude the addition of protected bike lanes with the *New Traffic Signal and Intersection Improvements at Lomasney Way and Nashua Street* action item. This request leaves open the possibility for action in the shorter term, though it is still unclear when funding will be available for the project. For this reason it remains in the long-term action item section for completion.

The rest of the community comments received are addressed in general order of their frequency, with some topic areas grouped together for clarity (action items and existing projects are in *call out* text):

SUPPORT STATEMENTS

In addition to support for the projects above, six people commented in general praise or support of the draft of this report, five individualized letters supported *Blossom Street Bike Lane and Safer Pedestrian Crossings*, two supported *North Washington Street Bus Lane*, one supported *Performance-Based Parking Meter Pricing*, and one supported *Pedestrian Wayfinding & Transit/Ridesharing Information Screens*—with a special request to include the West End Museum on the map.

NORTH-SOUTH RAIL LINK

Four letters requested more emphasis be given to the importance of the North-South Rail Link. The City acknowledges that commuters at North Station would be benefited by direct Commuter Rail connections south of the City, if it were financially or physically feasible, and edits were made to **page 50** in this regard. The question of feasibility is being explored at the State level and the undertaking is well beyond the scope of this Action Plan, which is focused on short-term improvements. (We also thank the North-South Rail Link supporters for a historical correction. The opening of North Union Station occurred in 1894, not 1893, and this is now reflected on **page 3**).

EXISTING PROJECTS AND ACTION ITEMS

Some comments and requests were tangentially or directly related to Existing Projects (**pages 48-52**) and/or other Action Items (**pages 59-83**).

One request for an enhanced crossing of Charles River Dam Road at Leverett Circle is part of the *Leverett Circle Pedestrian Bridge* project. This project is nearing 25% design, which will involve a public hearing, and currently includes a 15-foot wide crosswalk across the signal-protected Charles River Dam Road.

Another comment requested pedestrian improvements at Keany Square, some of which are currently being addressed as part of the *North Washington Street Bridge Reconstruction* project. Signal and geometric changes to that intersection are included that better serve pedestrians and bicycles—though it is acknowledged that the intersection is physically constrained.

A suggestion for bike parking at North Station will be accommodated as part of the *Hub on Causeway* project, which will add roughly 50 public bike parking spaces in and around the development—this fact has been added to **page 49**.

There were two general suggestions to lower pedestrian wait times at traffic signals. As part of the *Bulfinch Crossing* development and several other projects in the neighborhood, almost every signal in the neighborhood is being retimed—but this feedback on those pending improvements is acknowledged.

A suggestion to restrict commercial delivery to nighttime only is well taken, but is perhaps premature. In the most active loading corridor, the Canal Street sidewalks have generous enough widths to allow the intermittent loading activity and pedestrian flows to be accommodated. However as pedestrian volumes continue to shift to Canal Street due to circulation and land use changes as projected and as the City continues to advance the *Shared Street Construction on Canal Street* design, this suggestion can be reviewed and discussed as part of that public process.

A complaint about wrong-way driving on Friend Street will be resolved as part of the *Bulfinch Triangle Access and Curb Use Improvements* action item, as this project will reverse the direction of Friend Street to meet the demand for easier vehicle access.

One suggestion for wider sidewalks and protected bike lanes on Merrimac Street is interrelated with the *Bus Priority Lane Between South Station, The Seaport, and North Station* action item. One possible route for this bus priority lane would utilize Merrimac Street, meaning it would compete for space with this suggestion. When that project—which is also a priority in the City's Go Boston 2030 Plan—begins its design phase, improved pedestrian and bicycle accommodations will be part of that process.

Lastly, a request for increased service on the Green and Orange Lines is being met as part of the *Green Line Extension* project and a *new fleet of 152 Orange Line Cars* that will begin arriving in 2018. The *Green Line Extension*'s average weekday ridership is projected to be 45,000 by 2030 (increasing the use of Science Park Station in the North Station Area), and the new Orange Line cars will increase capacity by 30-35%—this information is now included on **page 51**.

LOWELL SQUARE SIGNAL TIMING

One comment detailed ongoing signal timing problems at Lowell Square, specifically a very limited green time for the right-hand turn lane from Merrimac Street to Causeway Street that is causing long traffic queues. City representatives have observed the problem and are currently investigating solutions.

REDUCING TRAFFIC CONGESTION

A handful of letters suggested reducing traffic congestion either by repurposing on-street parking or by enacting congestion pricing. While studies have shown that increasing the financial cost of driving downtown can reduce single-occupancy driving, these changes are highly controversial and would require a much larger city-wide community process. However, as part of *Pedestrian Priority for Canal Street*, some seasonal and permanent changes to curb use are proposed, including *Performance-Based Parking Meter Pricing*, and employers and building owners do have the ability to set their own private parking pricing as part of *Encourage Local Employers and Residential Buildings to Report Progress Annually on TDM Goals*.

ENFORCEMENT

A couple of comments related to enforcement issues, such as illegal parking, construction noise at night, and the need for additional traffic enforcement. BPD District A-1 is aware of these needs, as well as a variety of TD Garden event-night problems that can and do occur, but needs help to identify when and where they are happening day-to-day. Residents are encouraged to report illegal parking or other illegal activity as it is happening to the District A-1 front desk at 617-343-4240.

CHARGING STATIONS FOR ELECTRIC CARS

Electric car charging stations are part of the City of Boston's Complete Streets mission and its commitment to sustainability and are required of all new developments that build off-street parking. To answer one community member's request for more electric car charging stations near North Station, there are currently 24 electric-car charging stations in the area, and four more at the Museum of Science parking garage. The North Station Area locations are on Cambridge Street near City Hall, outside of Bowdoin Street MBTA Station, and inside the public parking garage at 100 Cambridge Street. There are also stations in the Longfellow Garage off of Staniford Street, in the North Station Garage off of Nashua Street, and in the new Avalon North Station building's parking facility. The City anticipates and supports more stations as demand increases and development projects move forward.

SKYWAYS OR AN UNDERGROUND CITY

Boston's winter weather is a popular talking point for many a city project, and one commenter suggested ways to protect pedestrians from the elements. Minneapolis has made use of a vast system of skyways between downtown buildings, and Montreal has a well-developed underground shopping area in its downtown that is used by over 500,000 pedestrians per day in the winter months. These projects were largely funded by private development and transit expansion projects, and while they do keep people warm in the winter, critics have noted that the life of the sidewalk and the local businesses it supports may be degraded, particularly in the case of Minneapolis. There is one underground element in the ***Hub on Causeway*** project—a commitment to replace the underground tunnel between North Station and the Orange Line. This commitment is due to be completed in 2018 and will also connect commuters to the project's retail tenants.

The City of Boston values the time and energy residents have spent providing these comments, and is encouraged by this showing of careful thought and support to complete the Action Plan.

Each of the final action items described in **Section 6** have been shared with the City or State agencies that would ultimately carry them forward. As with all tasks carried out in complex environments, challenges will undoubtedly arise in carrying some of them forward to completion. However it is the hope of the NSAMAP team that the best efforts of City and State staff, backed by public support of this plan, will make these action items a reality, and make the North Station Area a more enjoyable place to live, work, and travel through.

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Appendix A – Point Polling and Online Ranking Results

Point Polling and Online Ranking Results

Category	Action Item			Public Meeting Poll									Online Ranking Poll											
			Dot Results						Share within Category			Rankings (1 = highest priority)											Share
	#	Project	100 Pts	50 Pts	25 Pts		Total Dots	Total Pts	% of Dots	% of Points	Rank	1	2	3	4	5	6	7	8	9	Avg. Rating		Rank
Pedestrian	1.1	Canal Street Pedestrianization with Commercial Delivery	21	0	0	=	21	2100	28%	42%	1	77	46	27	28	29	19	17			3.05	/ 7	2
	1.2	Cardinal O'Connell Way Shared Street	0	4	0	=	4	200	6%	4%	7	5	22	32	43	46	44	51			4.81	/ 7	6
	1.3	West End Pedestrian Crossing Improvements Project	2	3	0	=	5	350	8%	7%	5	41	50	58	42	28	16	8			3.19	/ 7	3
	1.4	West End Signal Timing Improvement Project (Duplicated as 7.4)	3	2	2	=	7	450	10%	9%	4	14	29	33	24	47	58	38			4.59	/ 7	5
	1.5	West End Sidewalk Improvements Project	4	4	3	=	11	675	17%	13%	3	11	26	49	56	50	33	18			4.15	/ 7	4
	1.6	West End Wayfinding Project	0	5	3	=	8	325	13%	6%	6	7	15	16	25	30	53	97			5.48	/ 7	7
	1.7	Charles Circle Pedestrian Improvements	5	5	8	=	18	950	30%	19%	2	88	55	28	25	13	20	14			2.74	/ 7	1
Place-making	2.1	Bulfinch Triangle Tactical Urbanism Pilot	4	1	4	=	9	550	39%	45%	1	132	79	27							1.56	/ 3	1
	2.2	Parklet on Blossom Street	0	2	2	=	4	150	17%	12%	3	45	75	118							2.31	/ 3	3
	2.3	West End Chair Placements and Seating Improvements	3	2	5	=	10	525	43%	43%	2	61	84	93							2.13	/ 3	2
Flex Zone (Curb Space) and Parking	3.1	Permitted Shuttle Stop Network	2	2	2	=	6	350	21%	23%	2	71	57	49	37	15					2.42	/ 5	1
	3.2	West End Dynamic/Increased Parking Pricing Pilot	4	2	3	=	9	575	32%	37%	1	63	44	41	37	44					2.80	/ 5	2
	3.3	Parking Garage Wayfinding and Occupancy Data	0	2	3	=	5	175	18%	11%	4	22	46	45	58	58					3.37	/ 5	4
	3.4	Open data on the Downtown Boston Parking Freeze	0	0	4	=	4	100	14%	6%	5	30	37	34	50	78					3.48	/ 5	5
	3.5	West End/Bulfinch Triangle Curb Use Reorganization	3	1	0	=	4	350	14%	23%	2	43	45	60	47	34					2.93	/ 5	3
Bicycles	4.1	Blossom Street Road Diet and Bike Lane	4	1	0	=	5	450	5%	7%	6	3	12	11	20	41	48	39	22	18	5.81	/ 9	6
	4.2	Cambridge Street Protected Bike Lane	18	6	0	=	24	2100	24%	33%	1	60	39	33	21	15	15	10	12	9	3.43	/ 9	1
	4.3	Charles Street Protected Bike Lane	5	1	1	=	7	575	7%	9%	5	31	31	39	33	22	18	16	14	10	4.08	/ 9	4
	4.4	Connect both sides of Longfellow Bridge to Esplanade via Existing Tunnel	6	0	0	=	6	600	6%	9%	4	30	31	22	17	29	29	13	18	25	4.70	/ 9	5
	4.5	Lomasney Way/Nashua Street Protected Bike Lane	7	2	6	=	15	950	15%	15%	2	29	28	35	42	37	15	7	12	9	4.01	/ 9	3
	4.6	Merrimac/Congress Street Protected Bike Lane	5	5	6	=	16	900	16%	14%	3	31	48	40	31	17	15	16	7	9	3.71	/ 9	2
	4.7	West End Expansion of Boston's Bicycle Wayfinding System	0	0	13	=	13	325	13%	5%	8	7	11	12	17	18	15	26	38	70	6.68	/ 9	9
	4.8	West End Hubway Expansion	0	2	11	=	13	375	13%	6%	7	14	9	7	15	17	34	38	47	33	6.27	/ 9	7
	4.9	Bike Parking in the Bulfinch Triangle	0	1	2	=	3	100	3%	2%	9	9	5	15	18	18	25	49	44	31	6.31	/ 9	8

** Online polling scores are a priority list; a lower number means a higher priority. Public meeting polling is a ranked distribution of resource priorities; a higher number expresses the opinion that more resources should be dedicated (i.e. a higher priority).

Point Polling and Online Ranking Results

Category	Action Item		Public Meeting Poll									Online Ranking Poll											
			Dot Results						Share within Category			Rankings (1 = highest priority)											Share
	#	Project	100 Pts	50 Pts	25 Pts		Total Dots	Total Pts	% of Dots	% of Points	Rank	1	2	3	4	5	6	7	8	9	Avg. Rating		Rank
Transit	5.1	Consolidation of local MBTA routes, local shuttles, and tourist bus loop/shuttle stop consolidation study	5	1	2	=	8	600	13%	21%	2	12	35	39	43	37	24	18			3.97	/ 7	4
	5.2	Bus Priority Lane Connections between North Station Area and South Boston	0	2	7	=	9	275	15%	9%	5	**65**	**44**	**33**	**32**	**15**	**11**	**8**			2.77	/ 7	1
	5.3	North Washington Bus Stop Improvements Project	0	1	2	=	3	100	5%	3%	6	10	15	29	45	47	34	28			4.53	/ 7	6
	5.4	North Washington Street Inbound Transit Lane Keany Square to Haymarket	2	2	5	=	9	425	15%	15%	3	**36**	**42**	**29**	**25**	**32**	**32**	**12**			3.57	/ 7	3
	5.5	Create Public Transit App Kiosks at Major MBTA Stations (including “fastest route to the airport”)	0	1	1	=	2	75	3%	3%	7	8	28	16	20	25	37	74			5.08	/ 7	7
	5.6	Lovejoy Wharf Ferry	5	6	12	=	23	1100	37%	38%	1	23	24	30	14	23	50	44			4.52	/ 7	5
	5.7	Airport Shuttle from North Station	1	3	4	=	8	350	13%	12%	4	54	20	32	29	29	20	24			3.55	/ 7	2
Shared Mobility	6.1	Expand DriveBoston for New Carsharing Locations in the North Station Area, and Pilot One-Way Car Share	0	2	2	=	4	150	36%	43%	1	87	121								1.58	/ 2	2
	6.2	North Station Mobility Hub Enhancements	0	1	6	=	7	200	64%	57%	2	**121**	**87**								1.42	/ 2	1
Motorized Traffic	7.1	Adaptive Signal Technology (AST) Study	2	4	1	=	7	425	10%	9%	5	40	36	23	28	34	16	19	12		3.79	/ 8	1
	7.2	Bulfinch Triangle Traffic Circulation Improvements	6	0	2	=	7	650	10%	14%	3	15	17	27	36	38	36	27	12		4.64	/ 8	6
	7.3	Don’t Block the Box Signage at Key Locations	7	0	5	=	12	825	17%	17%	2	32	34	21	32	21	16	30	22		4.22	/ 8	4
	7.4	West End Signal Timing Improvement Project (Duplicated as 1.4)	5	1	2	=	8	600	11%	13%	4	**33**	**25**	**45**	**28**	**29**	**19**	**25**	**4**		3.83	/ 8	2
	7.5	New Signal for left-hand turn into Charles River Plaza	1	1	0	=	2	150	3%	3%	8	3	26	21	19	27	39	32	41		5.36	/ 8	7
	7.6	Residential Permit for Neighborhood Access During TD Garden Events	3	0	5	=	8	425	11%	9%	5	18	13	10	20	10	28	31	78		5.83	/ 8	8
	7.7	Encourage Employers to form Partnerships for Transportation Demand Management (TDM) and Perform Annual TDM Reporting (incl. TD Garden)	1	5	3	=	9	425	13%	9%	5	**43**	**26**	**27**	**19**	**27**	**19**	**23**	**24**		4.11	/ 8	3
	7.8	Lomasney Way/Nashua Street/Martha Road Intersection Improvements – Near and Long-Term	10	4	3	=	17	1275	24%	27%	1	**24**	**31**	**34**	**26**	**22**	**35**	**21**	**15**		4.23	/ 8	5

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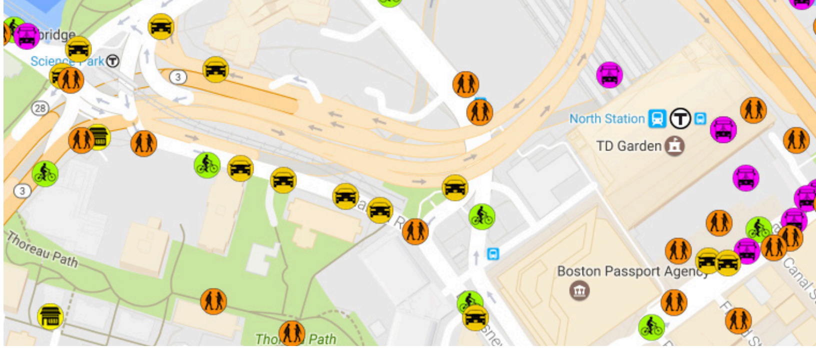

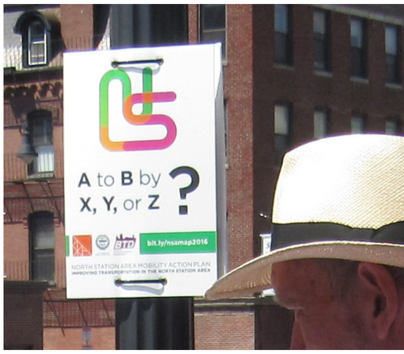
A to B by X, Y, or Z ?
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NORTH STATION AREA MOBILITY ACTION PLAN
IMPROVING TRANSPORTATION IN THE NORTH STATION AREA

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